Macedon Operations Environment Plan (Commonwealth)

Australian Operations

November 2024

Revision 13

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1. INTRODUCTION

1.1 Overview

Woodside Energy (Australia) Pty Ltd (Woodside), as Titleholder under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Commonwealth) (referred to as the Environment Regulations), and as a participant in the Joint Venture detailed in Section 1.6, submits this Environment Plan in respect of the Macedon field production system which is operated on behalf of the Joint Venture by Woodside Energy Global Pty Ltd. The Macedon field production system commenced operation in 2013. The Macedon field production system consists of four subsea wells, subsea production equipment and the Commonwealth waters portion of a wet gas pipeline. The Macedon field production system and primary approval for the Macedon development (Section 1.10.2), also has capacity for future subsea wells, one of which may be added during the life of this Environment Plan.

The following activities are proposed to occur within production license WA-42-L and pipeline license WA-23-PL:

- Production of gas from four existing subsea wells
- Management of two plugged and suspended exploration wells with wellheads
- Transportation of wet gas from the Macedon gas field to the Macedon Gas Plant located south of Onslow in Western Australia (WA)
- Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities.

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

The transportation of gas through State waters and the processing of gas at the onshore Macedon Gas Plant are outside the scope of this EP. These activities are covered under separate EPs and other approvals prepared in accordance with the applicable State regulations.

This EP has been prepared in accordance with the requirements of the Environment Regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). In accordance with the requirements of Regulation 41 of the Environment Regulations, Woodside has submitted this revision of the Macedon Operations EP (Commonwealth) to NOPSEMA at least 14 days before the end of the five-year period from the previous acceptance under Regulation 11 of the Environment Regulations.

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 Activities Program are identified
- appropriate management controls are implemented to reduce impacts and risks to a level that is ‘as low as reasonably practicable’ (ALARP) and acceptable
- the Petroleum Activities Program is carried out in a manner consistent with the principles of ecologically sustainable development (as defined in Section 3A of the *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) (*EPBC Act)).

This EP describes the process and resulting outputs of the risk assessment, whereby impacts and risks are managed accordingly.

The EP defines activity-specific environmental performance outcomes (EPOs), standards (EPSs), and measurement criteria (MC). These form the basis for monitoring, auditing, and managing the Petroleum Activities Program to be undertaken by Woodside and its contractors. The implementation strategy (derived from the decision support framework tools) specified in this EP provides Woodside and NOPSEMA with the required level of assurance that impacts and risks associated with the activity are reduced to ALARP and are acceptable.

1.3 Scope of the Environment Plan

The scope of this EP covers the activities that define the Petroleum Activities Program, as described in Section 3. The Operational Area, as defined in Section 3.4, defines the spatial boundary of the Petroleum Activities Program.

This EP addresses potential environmental impacts from planned activities and potential unplanned risks that originate from within the Operational Area. Transit to and from the Operational Area by project vessels, as well as port activities associated with these vessels, are not within the scope of this EP. Vessels supporting Petroleum Activities Program operating outside the Operational Area (e.g., transiting to and from port) are subject to applicable maritime regulations and other requirements and are not managed by this EP.

1.4 Environment Plan Summary

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

Table 1-1: Environment Plan Summary

EP Summary material requirement	Relevant section of this EP containing EP Summary material
The location of the activity	Section 3
A description of the receiving environment	Section 4
A description of the activity	Section 3
Details of the environmental impacts and risks	Section 6
The control measures for the activity	Section 6
The arrangements for ongoing monitoring of the titleholder's environmental performance	Section 8
Response arrangements in the oil pollution emergency plan (OPEP)	Appendix H Oil Spill Preparedness and Response Strategy Selection and Evaluation Appendix I First Strike Plan
Consultation already undertaken and plans for ongoing consultation	Appendix F
Details of the titleholder's nominated liaison person for the activity	Section 1.7.2

1.5 Structure of the Environment Plan

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

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

Criteria for acceptance	Content Requirements/Relevant Regulations	Elements	Section of EP
Regulation 34(a): *is appropriate for the nature and scale of the activity*	Regulation 21: *Environmental Assessment* Regulation 22: *Implementation strategy for the environment plan* Regulation 24: *Other information in the environment plan*	The principle of 'nature and scale' applies throughout the EP	Section 2 Section 3 Section 4 Section 5 Section 7.3
Regulation 34(b): *demonstrates that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable* Regulation 34(c): *demonstrates that the environmental impacts and risks of the activity will be of an acceptable level*	Regulation 21(1)–21(7): *21(1) Description of the activity* *21 (2)(3) Description of the environment* *21(4) Requirements* *21 (5)(6) Evaluation of environmental impacts and risks* *21(7) Environmental performance outcomes and standards* Regulation 24(a)–24(c): • *A statement of the titleholder's corporate environmental policy* • *A report on all consultations between the titleholder and any relevant person*	Set the context (activity and existing environment) Define 'acceptable' (the requirements, the corporate policy, relevant persons) Detail the impacts and risks Evaluate the nature and scale Detail the control measures – ALARP and acceptable	Section 1 Section 2 Section 3 Section 4 Section 5 Section 7.3
Regulation 34(d): *provides for appropriate environmental performance outcomes, environmental performance standards and measurement criteria*	Regulation 21(7): *Environmental performance outcomes and standards*	EPOs EPSs MC	Section 5
Regulation 34(e): *includes an appropriate implementation strategy and monitoring, recording and reporting arrangements*	Regulation 22: *Implementation strategy for the environment plan*	Implementation strategy, including: • systems, practices and procedures • performance monitoring • OPEP and scientific monitoring • ongoing consultation.	Section 7.3
Regulation 34 (f): *does not involve the activity or part of the activity, other than arrangements*	Regulation 21 (1)–21(3): *21(1) Description of the activity* *21(2) Description of the environment*	No activity, or part of the activity, undertaken in any part of a declared World Heritage property	Section 3 Section 4 Section 5

Criteria for acceptance	Content Requirements/Relevant Regulations	Elements	Section of EP
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	*21(3) Without limiting [Regulation 21(2)(b)], particular relevant values and sensitivities may include any of the following:* • *the world heritage values of a declared World Heritage property within the meaning of the EPBC Act;* • *the national heritage values of a National Heritage place within the meaning of that Act;* • *the ecological character of a declared Ramsar wetland within the meaning of that Act;* • *the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act;* • *the presence of a listed migratory species within the meaning of that Act;* • *any values and sensitivities that exist in, or in relation to, part or all of:* • *a Commonwealth marine area within the meaning of that Act; or* • *Commonwealth land within the meaning of that Act.*		
Regulation 34(g): *(i) the titleholder has carried out the consultations required by Section 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 in preparation of the EP	Appendix F
Regulation 34(h): *complies with the Act and the regulations*	Regulation 23: *Details of the Titleholder and liaison person* Regulation 24(c): *Details of all reportable incidents in relation to the proposed activity.*	All contents of the EP must comply with the Act and the regulations	Section 1.6 Section 9.3

1.6 Description of the Titleholder

Woodside Energy (Australia) Pty Ltd is a Titleholder under the Environment Regulations and participant in the Joint Venture comprised of Santos WA PVG Pty Ltd and itself. The Petroleum Activities Program will be undertaken by Woodside Energy Global Pty Ltd as operator on behalf of the Joint Venture.

Woodside's mission is to deliver affordable energy solutions and superior outcomes for stakeholders by being society's trusted energy partner. Woodside's strategy is to provide the low cost, lower carbon energy our world needs. We have significant opportunities to prosper and grow. Our three pillars, oil, gas and new energy, each have a role to play in our future. Wherever Woodside works, it is committed to living its values of one team, we care, innovation, results matter, and we build and maintain trust.

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

Since 1984, the company has been operating the landmark Australian project, the North West Shelf, and it remains one of the world's premier liquefied natural gas (LNG) facilities. In 2012, Woodside added the Pluto LNG Plant to its onshore operating facilities.

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

1.7 Details of Titleholder and Nominated Liaison

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

1.7.1 Titleholder

Woodside Energy (Australia) Pty Ltd

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 63 005 482 986

1.7.2 Nominated Liaison Person

Andrew Winter

Corporate Affairs Manager

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

E: feedback@woodside.com

1.7.3 Arrangements for Notifying Change

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

1.8 Woodside / BHP Petroleum Merger

BHP Group Ltd's petroleum assets (BHP Petroleum) and Woodside announced their intention to merge in 2021, which became effective on 1 June 2022. All BHP Petroleum policies, standards, processes and procedures were included in the merger agreement and remain valid. Harmonisation of processes between BHP Petroleum and Woodside commenced planning upon the completion of the merger and will be conducted in a staged manner. The BHP Petroleum HSE Management system (herein referred to as the Woodside (PetDW) HSE Management System) will continue to be used by the Macedon operations until potential changes have been assessed.

The Titleholder name change from BHP Petroleum (Australia) Pty Ltd to Woodside Energy (Australia) Pty Ltd was made on 11 July 2022.

1.9 Woodside Management System

All Woodside controlled activities associated with the Petroleum Activities Program will be conducted in line with:

- Woodside "Our Values"
- Woodside Environment and Biodiversity Policy (Appendix A)
- Woodside (PetDW) Management System
- Woodside (PetDW) Health, Safety and Environment (HSE) Standard

All Woodside sites must maintain up-to-date practices that adhere to the requirements contained in the Woodside (PetDW) HSE Management System and Standard. Activity-specific environmental management measures specific to the Petroleum Activities Program are implemented through this EP.

1.9.1 Environment and Biodiversity Policy

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

1.10 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 are relevant to the management of risks and impacts of the Petroleum Activities Program are detailed in Appendix B . As this EP covers activities in Commonwealth waters only, it will not be assessed under the *Environmental Protection Act 1986* (WA).

1.10.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

The Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) controls exploration and production activities beyond three nautical miles (nm) of the mainland (and islands) to the outer extent of the Australian Exclusive Economic Zone at 200 nm.

The relevant requirements in Section 572 of the OPGGS Act are detailed in Table 1-3.

Table 1-3: Relevant requirements of the OPGGS Act 2006

Section Number	Relevant Requirement	Relevant Section of the EP
Section 572 – Maintenance and removal of property etc. by titleholder		
2	*A titleholder must maintain in good condition and repair all structures that are, and all equipment and other property that is:* *(a) in the title area; and* *(b) used in connection with the operations authorised by the permit, lease, licence or authority.*	Section 3.8
3	*A titleholder must remove from the title area all structures that are, and all equipment and other property that is, neither used nor to be used in connection with the operations:* *(a) in the title area; and* *(b) used in connection with the operations authorised by the permit, lease, licence or authority.*	Section 8.3

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 carried out in a manner:

- consistent with the principles of ecological sustainable development
- 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.

1.10.2 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

One of the objectives of the EPBC Act is to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places in Australia. These are defined under Part 3 of the Act as “Matters of National Environmental Significance” (MNES). The EPBC Act sets a regime which aims to ensure actions taken on (or impacting upon) Commonwealth land or waters are consistent with the principles of ecological sustainable development. When a person proposes to take an action that they believe may need approval under the EPBC Act, they must refer the proposal to the Commonwealth Minister for Environment.

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

1.10.2.1 Offshore Project Approval

The proposed Macedon Gas Development was referred under the EPBC Act on 19 November 2008 (Referral No 2008/4605) and deemed to not be a controlled action, if undertaken in a particular

manner, on 7 December 2009. The points of the decision letter that are applicable to ensuring that the Petroleum Activities Program continues to not be a controlled action are listed in Table 1-4.

The referral states that the development will comprise up to four subsea production wells with a potential further three infill wells or local tie-back wells drilled during operations. The wells will be tied back to a subsea manifold and connected to the main wet gas pipeline. To date there are currently four production wells.

The notional Macedon development area is a polygon covering the gas field as defined in EPBC Referral No 2008/4605.

Table 1-4: Particular Manners in which proposed action must be taken (EPBC 2008/4605) relevant to the Petroleum Activities Program

Relevant Point	Relevant Section of EP
Refuelling of primary vessels[1] and support vessels[2] must only be undertaken during daylight hours.	NA – Refuelling is proposed to occur at port facilities only
Support vessels[2] must not be refuelled within 12 nautical miles of Ningaloo Marine Park (as defined by outer Commonwealth boundary), the north and south Muiron islands and Serrurier Island (as defined by 0 metres lowest astronomical tide, LAT), unless refuelling is to occur in a port or harbour for example Exmouth Boat Harbour.	NA – Refuelling is proposed to occur at port facilities only
During night time operations external lighting of all vessels must be minimised to that required for safety of navigation and safety of deck operations.	Section 6.6.7
To minimise impacts to the Commonwealth marine area from introduced marine pest species, all primary and support vessels must, as a minimum, adhere to the management measures set out within the Non-Indigenous Marine Species Management Plan for the Pyrenees Oil Field Development (EPBC 2005/2034) as approved by the Ministers delegate on 22 October 2008.	Section 7.1.8

1. Primary Vessels are defined in the referral to include anchored or slow-moving vessels that are performing infrastructure installation, maintenance or repair tasks and are required at the infrastructure site for extended periods. Such vessels include trenching barge, drill rig and vessel with wireline capability, heavy lift vessel, multi-support vessel, pipelay barge, anchor handlers and self-loading rock dump vessels.

2. Support Vessels are defined in the referral to include vessels that intermittently provide a service to Primary Vessels and are not required to be stationed at the infrastructure site for extended periods such as supply vessels and tugs.

1.10.2.2 Recovery Plans and Threat Abatement Plans

Under s139(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 s268 of the EPBC Act:

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

In relation to offshore petroleum activities in Commonwealth waters, these requirements are now administered by NOPSEMA in accordance with commitments set out in the Programs. Relevant recovery plans or threat abatement plans relevant to the scope of this EP have been identified as described in Section 2.8 and assessed in Section 7.2.

1.10.2.3 Australian Marine Parks

Under the EPBC Act, Australian Marine Parks (AMPs), formerly known as Commonwealth Marine Reserves, 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. Other parts of the Commonwealth Government must not perform functions or exercise powers in relation to these parks that are inconsistent with management plans (Section 362 of the EPBC Act). Relevant AMPs are

listed in Section 4.8 and described in Appendix K Master Existing Environment. The North-west Marine Parks Network Management Plan describes the requirements for management.

1.10.2.4 World Heritage Properties

Australian World Heritage management principles are prescribed in Schedule 5 of the EPBC Regulations 2000. Management principles that are considered relevant to the scope of this EP are provided in Table 1-5.

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

Number	Principle	Relevant Section of the EP
3	Environmental impact assessment and approval 3.01 This principle applies to the assessment of an action that is likely to have a significant impact on the World Heritage values of a property (whether the action is to occur inside the property or not). 3.02 Before the action is taken, the likely impact of the action on the World Heritage values of the property should be assessed under a statutory environmental impact assessment and approval process. 3.03 The assessment process should: identify the World Heritage values of the property that are likely to be affected by the action; and examine how the World Heritage values of the property might be affected; and provide for adequate opportunity for public consultation. 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. 3.05 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.	3.01 and 3.02: Assessment of significant impact on World Heritage values is included in Section 5. Principles are met by the submitted EP. 3.03 (a) and (b): World Heritage values are identified in Section 4 and considered in the assessment of impacts and risks for the Petroleum Activities Program in Section 5. 3.03 (c): Relevant persons consultation and feedback received in relation to impacts and risks to the Ningaloo World Heritage Property are outlined in Appendix F . 3.04, 3.05 and 3.06: Principles are considered to be met by the acceptance of this EP.

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

2. ENVIRONMENT PLAN PROCESS

2.1 Overview

This section outlines the process taken by Woodside to prepare this EP. The process describes the activity, the existing environment, followed by the environmental risk management methodology used to identify, analyse and evaluate risks to meet ALARP levels and acceptability requirements, and develop EPOs and EPSs. This section also describes Woodside's risk management methodologies as applied to implementation strategies for the activity. The process described is repeated in full with each five-year revision of the EP having regard to relevant changes to operational requirements and any requisite updates so that the environmental management practice applied is contemporary and good industry practice.

Regulation 21(5) of the Environment Regulations requires the EP to include details of the environmental impacts and risks for the Petroleum Activities Program, and an evaluation of all the impacts and risks, appropriate to the nature and scale of each impact and risk. The objective of the risk assessment process described in this section is to identify risks and associated impacts of an activity, so they can be assessed, and appropriate control measures applied to eliminate, control or mitigate the impact/risk to ALARP, and to determine if the impact or risk level is acceptable.

Environmental impacts and risks include those directly and indirectly associated with the Petroleum Activities Program, and include potential emergency and accidental events:

- **Planned activities** have the inherent potential to cause environmental impacts.
- **Environmental risks** are unplanned events with the potential for environmental impact (termed risk 'consequence').

In this section, potential impacts from planned activities are termed 'impacts', and 'risks' are associated with unplanned events with the potential for environmental impact (should the risk be realised), with such impacts termed potential 'consequences'.

2.2 Environmental Risk Management Methodology

2.2.1 Woodside PetDW Risk Management Process

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

The environmental risk management methodology used in this EP is based on Woodside's PetDW Risk Management Procedure. This procedure aligns to industry standards, such as International Organization for Standardization (ISO) 31000.

The risk management methodology provides a framework to demonstrate that risks and impacts are continually identified, reduced to ALARP and assessed to be at an acceptable level, as required by the Environment Regulations. A description of each step and how it is applied to the scopes of this activity is provided in the following sections.

2.2.2 Impact Assessment Process

To support effective environmental risk assessment, the impact assessment process illustrated in Figure 2-1 is used. This provides the steps undertaken to meet the required environment, health and social standards by ensuring impact assessments are undertaken appropriate to the nature and

scale of the activity, the regulatory context, the receiving environment, interests, concerns and rights of stakeholders, and the applicable framework of standards and practices.

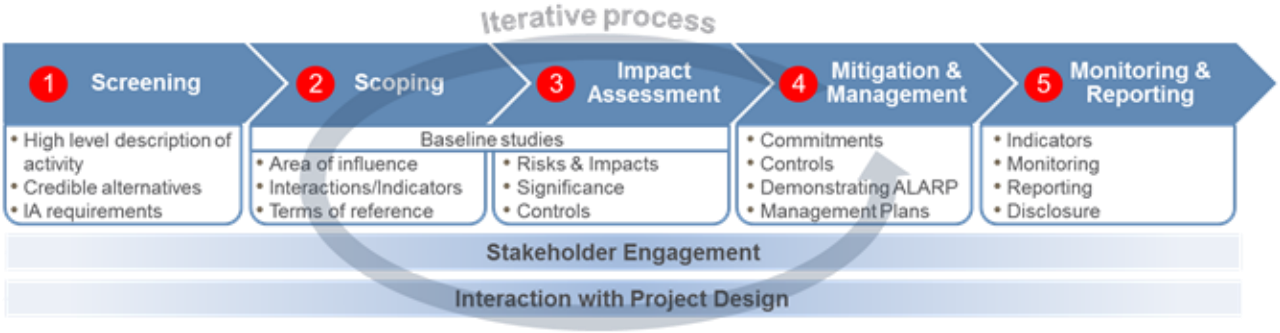

Figure 2-1: Impact assessment process

2.3 Environment Plan Development Process

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

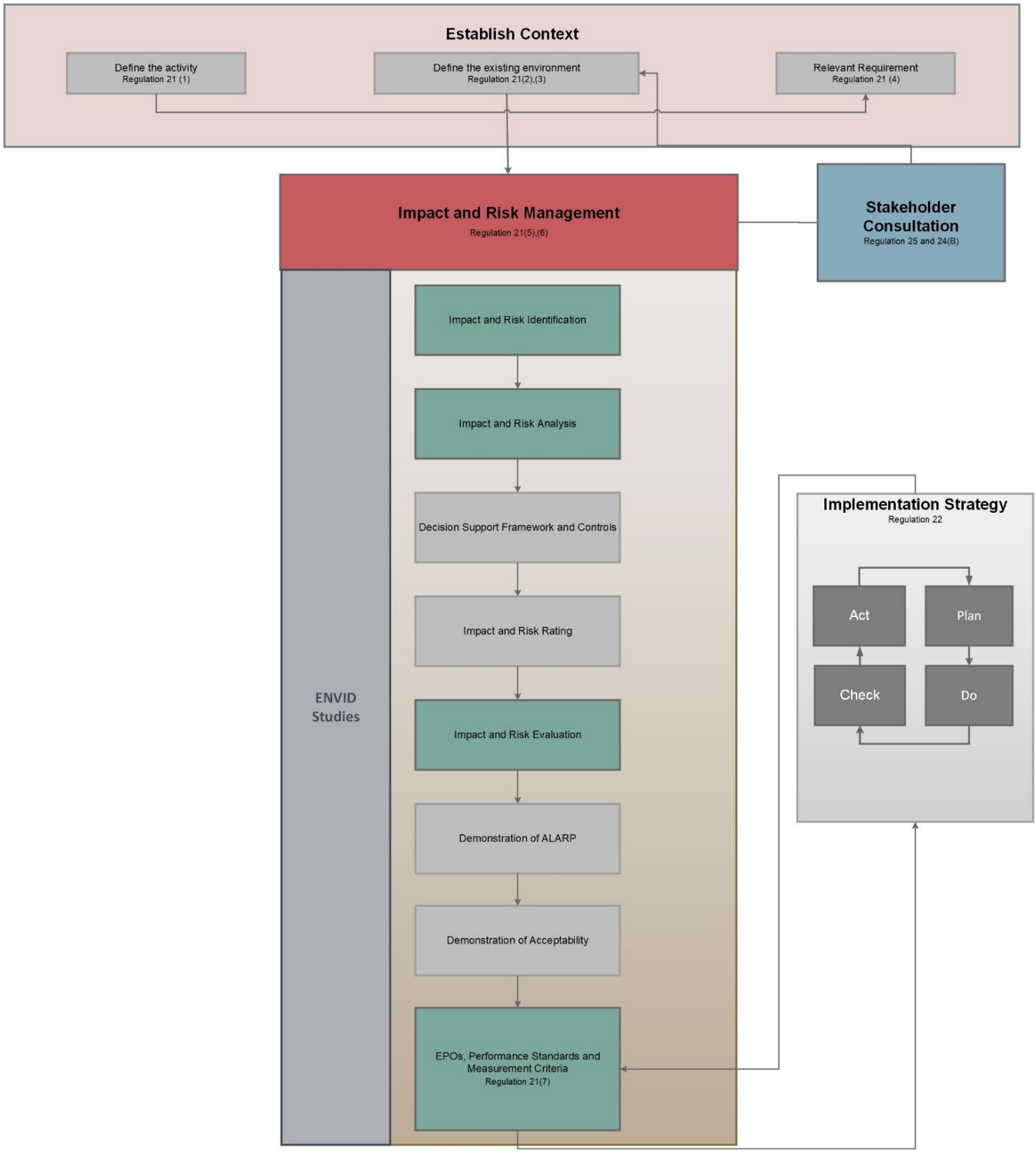

Figure 2-2: Environment Plan Development Process

2.4 Establish the Context

2.4.1 Define the Activity

This first stage involves evaluating whether the activity meets the definition of a 'petroleum activity' as defined in the Environment Regulations. The activity is described in relation to:

- the location
- what is to be undertaken
- how it is planned to be undertaken, including outlining operational details of the activity and proposed timeframes.

The 'what' and 'how' are described in the context of 'environmental aspects'[1] to inform the risk and impact assessment for planned (routine and non-routine) and unplanned (accidents/incidents/ emergency conditions) activities.

The activity is described in Section 3 and is referred to as the Petroleum Activities Program.

2.4.2 Define the Existing Environment

The context of the existing environment is described and determined by considering the nature and scale of the activity (size, type, timing, duration, complexity, and intensity of the activity), as described in Section 3. The purpose is to describe the existing environment that may be impacted by the activity, directly or indirectly, by planned or unplanned[2] events. A description of values and sensitivities relevant to Woodside's North West Shelf Operations is contained within the Master Existing Environment (Master EE) document. The Master EE is provided in Appendix K Master Existing Environment and is revised in accordance with Woodside's Management of Knowledge process as information contained within is superseded or new information arises (Section 8.8.1.1).

The existing environment (Section 4) is structured into subsections defining the physical, biological, socio-economic and cultural features and values of the existing environment that may be affected by the activity, in accordance with the definition of environment in Regulation 5 of the Environment Regulations. These subsections make particular reference to:

- The environmental, and social and cultural consequences as defined by Woodside (Table 2-4) which address key physical and biological attributes, as well as social and cultural values of the existing environment. These consequence definitions are applied to the impact and risk analysis (refer Section 2.2) and rated for all planned and unplanned activities. Additional detail is provided for unplanned hydrocarbon spill risk evaluation.
- EPBC Act MNES including listed threatened species and ecological communities and listed Migratory species. Defining the spatial extent of the existing environment is guided by the nature and scale of the Petroleum Activities Program (and associated sources of environmental risk). This considers the Operational Area and wider environment that may be affected (EMBA), as determined by the hydrocarbon spill risk assessments presented in Section 6.7. MNES, as defined under the EPBC Act, are addressed through Woodside's PetDW impact and risk assessment (Section 5).
- Relevant values and sensitivities, which may include world or national heritage listed areas, listed Threatened species or ecological communities, listed Migratory species, or sensitive values.

[1] *An environmental aspect is an element of the activity that can interact with the environment.*

[2] *For each source of risk, the credible worst-case scenario in conjunction with impact thresholds is used to determine the spatial extent of the EMBA. The worst-case unplanned event is considered to be an unplanned hydrocarbon release, further defined for each activity through the risk assessment process. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial scale of the environment that may be potentially impacted by the Petroleum Activities Program and in turn provides context to the 'nature and scale' of the existing environment.*

By grouping potentially impacted environmental values by aspect (as presented in Table 2-1) the presentation of information about the receiving environment is standardised. This information is then consistently applied to the risk evaluation section to provide a robust approach to the overall environmental risk evaluation and its documentation in the EP.

Table 2-1: Example of the Environment Values Potentially Impacted which are Assessed within the Environment Plan

Environmental Value Potentially Impacted *Regulations 21(2)(3)*						
Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitats	Species	Socio-economic

2.4.3 Relevant Requirements

The relevant requirements in the context of legislation, other environmental approval requirements, conditions and standards that apply to the Petroleum Activities Program are identified and reviewed and are presented in Appendix B .

The Woodside Environment and Biodiversity Policy is presented in Appendix A .

2.5 Impact and Risk Identification

Relevant environmental aspects and hazards were identified that support the process to define environmental impacts and risks associated with an activity.

The environmental impact and risk assessment presented in this EP has been informed by recent and historic 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, with the five-year revision of this EP. Woodside also considers environmental performance and compliance information gathered during the implementation phase of the in-force EP. Further, ongoing feedback from NOPSEMA to Woodside across its 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 environmental outputs of applicable risk and impact workshops and associated studies are referred to as ENVID in this EP.

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

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 2-2.

Table 2-2: Example of Layout of Identification of Risks and Impacts in Relation to Risk Sources

Impacts and Risks Evaluation Summary														
Source of Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Summary of source of impact/risk														

2.6 Impact and Risk Analysis

Risk analysis further develops the understanding of a risk by defining the impacts and assessing appropriate controls, as well as considering previous risk assessments for similar activities, relevant studies, past performance, external consultation, and the existing environment.

The key steps undertaken for each identified risk during the risk assessment were to:

- identify the Decision Type in accordance with the decision support framework
- identify appropriate control measures (preventive and mitigation) aligned with the Decision Type
- assess the risk level.

2.6.1 Decision Support Framework

To support the risk assessment process and the determination of acceptability (Section 2.7.2) Woodside's PetDW environmental risk management process includes the use of a decision support framework based on principles set out in the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This concept is integrated into the environmental impacts and risks identification and assessment workshop to determine the level of supporting evidence that may be required to draw sound conclusions regarding risk level and whether the risk is acceptable and ALARP (Section 2.7.1). 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/assessment).

The framework provides appropriate tools commensurate to the level of uncertainty or novelty associated with the risk/impact (referred to as the Decision Type A, B, or C). The Decision Type is selected based on an informed discussion around the uncertainty of the risk/impact and is documented in impact and risk register worksheets.

This framework enables Woodside to appropriately understand a risk and determine if the risk or impact is acceptable and can be demonstrated to be ALARP.

2.6.1.1 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 utilise professional judgment.

2.6.1.2 Decision Type B

Decision Type B risks and impacts typically involve greater uncertainty and complexity; and can include potential higher-order impacts/risks. These 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. Engineering risk assessment tools may include:

- risk-based tools such as cost-based analysis or modelling
- consequence modelling
- reliability analysis
- company values.

2.6.1.3 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/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 consultation as part of the risk assessment process.

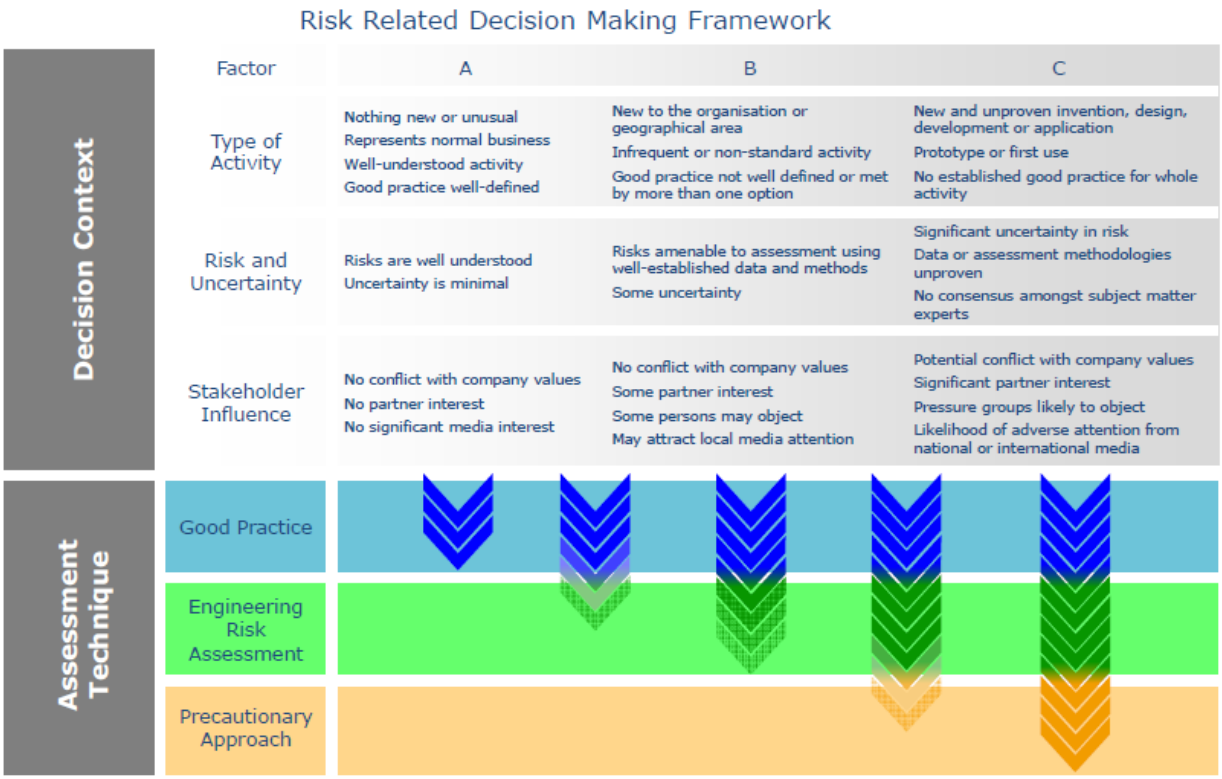

Figure 2-3: Risk-related Decision-making Framework (Oil and Gas UK, 2014)

2.6.1.4 Decision Support Framework Tools

These framework tools are applied, as appropriate, to help identify control measures based on the Decision Type described above:

- **Legislation, Codes and Standards (LCS)** – identifies the requirements of legislation, codes and standards that are to be complied with for the activity.
- **Good Industry Practice (GP)** – identifies further engineering control standards and guidelines that may be applied by Woodside above that required to meet the LCS.
- **Professional Judgement (PJ)** – uses relevant personnel with the knowledge and experience to identify alternative controls. Woodside applies the hierarchy of control as part of the risk assessment to identify any alternative measures to control the risk.
- **Risk-based Analysis (RBA)** – assesses the results of probabilistic analyses such as modelling, quantitative risk assessment and/or cost–benefit analysis to support the selection of control measures identified during the risk assessment process.
- **Company Values (CV)** – identifies values identified in Woodside's code of conduct, policies and the Woodside 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.

2.6.1.4.1 Decision Calibration

To determine that the alternatives selected and control measures applied are suitable, these 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 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.

2.6.2 Control Measures (Hierarchy of Controls)

Risk reduction measures are prioritised and categorised in accordance with the hierarchy of controls, where risk reduction measures at the top of the hierarchy take precedence over risk reduction measures further down:

- **Elimination** of the risk by removing the hazard.
- **Substitution** of a hazard with a less hazardous one.
- **Engineering Controls** include design measures to prevent or reduce the frequency of the risk event, or detect or control the 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** includes management systems and work instructions used to prevent or mitigate environmental exposure to hazards.
- **Emergency Response and Contingency Planning** includes methods to enable recovery from the impact of an event (e.g. protection barriers deployed near the sensitive receptor).

2.6.3 Impact and Risk Classification

Environmental impacts and risks are assessed to determine the potential impact severity/consequence using the process shown in Figure 2-4. Impacts are classified in accordance with the consequence severity level (Table 2-3). The assigned severity level is determined after identifying the Decision Type and appropriate control measures. Risks are assessed qualitatively and/or quantitatively in terms of both likelihood and consequence severity in accordance with the risk matrix (Table 2-3).

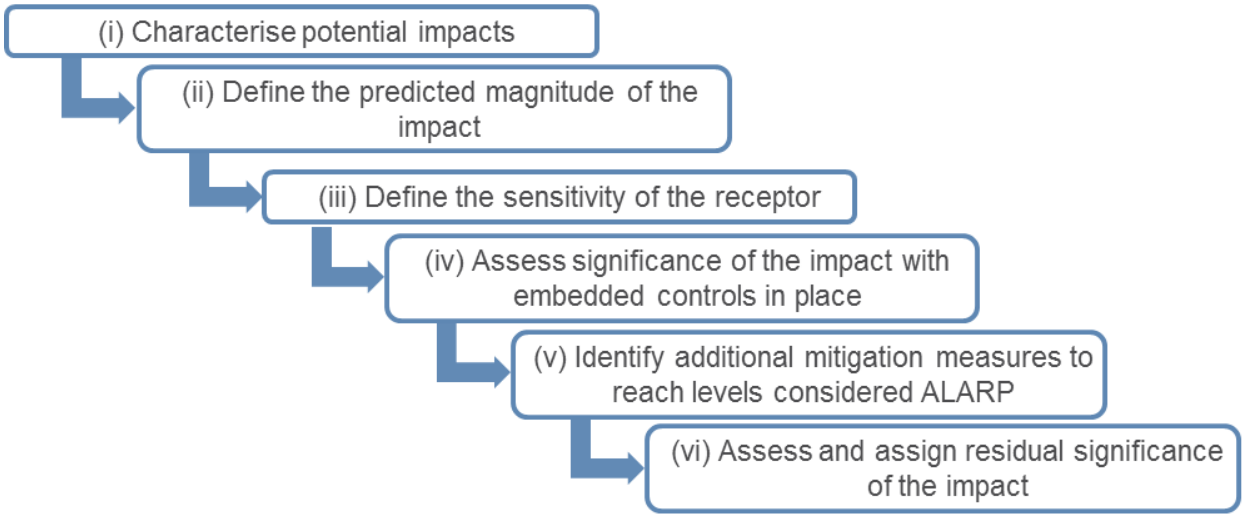

Figure 2-4: Environmental Risk and Impact Analysis

Table 2-3 Woodside PetDW Risk Matrix (Environment and Social and Cultural) Consequence Severity Descriptions, Severity Levels and Severity Factors

Environment	Social and Cultural	Severity Level	Severity Factor
Severe impact to the environment and where recovery of ecosystem function takes 10 years or more	Severe impact on community lasting more than 12 months or a substantiated human rights violation impacting 6 or more people	5 - Severe	1000
Serious impact to the environment and where recovery of ecosystem function takes between 3 years and up to 10 years	Serious impact on community lasting 6-12 months or a substantiated human rights violation impacting 1-5 people	4 - Serious	300

Environment	Social and Cultural	Severity Level	Severity Factor
Substantial impact to the environment and where recovery of ecosystem function takes between 1 year and up to 3 years	Substantial impact on community lasting 2–6 months	3 - Substantial	100
Measurable but limited impact to the environment, where recovery of ecosystem functions takes less than 1 year	Measurable but limited impact on community lasting less than 1 month	2 - Measurable	30
Minor temporary impact to the environment, where the ecosystem functions recovers with little intervention	Minor temporary community impact that recovers with little intervention	1 - Minor	10

The impact and risk information, including classification and evaluation information as shown in the example (Table 2-2), are tabulated for each planned activity and unplanned event.

2.6.3.1 Risk Rating Process

The risk rating process assigns a level of risk to each risk event, measured in terms of consequence severity and likelihood. The assigned risk rating is determined with controls in place, therefore; the risk rating is determined after identifying the Decision Type and appropriate control measures, this is also called residual risk. The risk rating process considers the potential environmental consequences severity and, where applicable, the social and cultural consequences severity of the risk. The risk ratings are assigned using the Woodside PetDW Risk Matrix (Table 2-3). The risk matrix delivers a risk rating, which is a score for prioritisation purposes.

The risk rating process is undertaken using the steps described in the subsections below.

2.6.3.1.1 Select the Severity Level

Determine the worst-case credible consequence severity (Table 2-4) associated with the selected event, assuming all controls (preventive and mitigative) are absent or have failed. If more than one potential consequence severity applies, select the highest severity consequence level.

2.6.3.1.2 Select the Likelihood Level

Determine the description that best fits the chance of the selected consequence severity occurring, assuming reasonable effectiveness of the prevention and mitigation controls (Table 2-4).

Table 2-4: Woodside PetDW Risk Matrix Likelihood Definitions Levels

Description	Frequency	Likelihood Factor
Highly Likely	Likely to occur within a 1 year period.	3
Likely	Likely to occur within a 1 - 5 year period.	1
Possible	Likely to occur within a 5 - 20 year period.	0.3
Unlikely	Likely to occur within a 20 - 50 year period.	0.1
Highly Unlikely	Not likely to occur within a 50 year period.	0.03

2.6.3.1.3 Calculate the Risk Rating

The risk rating is derived from the consequence severity factor and likelihood factors above, in accordance with the Woodside PetDW Risk Matrix shown in Table 2-3.Risk ratings in the green zone are considered “Tolerable” and require no further treatment to reach ALARP. Risk ratings in the red

zone are considered higher order risks which are considered “Intolerable” and must be considered further.

A likelihood and risk rating are only applied to environmental risks, not environmental impacts from planned activities.

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 as an output of the ENVID studies.

Likelihood	Severity Level				
	1	2	3	4	5
Highly Likely	30	90	300	900	3000
Likely	10	30	100	300	1000
Possible	3	9	30	90	300
Unlikely	1	3	10	30	100
Highly Unlikely	0.3	0.9	3	9	30

Figure 2-5: Woodside PetDW Risk Matrix – Risk Level

2.7 Impact and Risk Evaluation

Environmental impacts and risks cover a wider range of issues, differing species, persistence, reversibility, resilience, cumulative effects, and variability in severity than safety risks. Determining the degree of environmental risk, and the corresponding threshold for whether a risk/impact has been reduced to ALARP and is acceptable, is evaluated to a level appropriate to the nature and scale of each impact or risk. Evaluation includes considering the:

- Decision Type
- principles of ecological sustainable development – as defined under the EPBC Act
- internal context – ensuring the proposed controls and risk level are consistent with Woodside policies, procedures and standards
- external context – the environment consequence (Section 6) and stakeholder acceptability (Section 5)
- other requirements – ensuring the proposed controls and risk level are consistent with national and international standards, laws and policies.

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

2.7.1 Demonstration of ALARP

The descriptions in Table 2-5 articulate how Woodside demonstrates that different risks, impacts and Decision Types, identified within the EP, are ALARP.

Table 2-5: Summary of Woodside’s PetDW Criteria for ALARP Demonstration

Decision Type	Demonstration of ALARP Description
Decision Type A	***Demonstrating ALARP for lower-order (‘Type A’) impacts or risks***

	Identified regulatory, corporate and industry good practice controls are implemented, Woodside considers the impact or risk to be managed to ALARP and no further detailed engineering evaluation of controls is required. The application of feasible and readily implementable alternate, additional or improved controls may be adopted opportunistically when demonstrated to further reduce potential environmental impacts or risks.
Decision Type B	***Demonstrating ALARP for higher-order ('Type B') impacts or risks*** In addition to relevant regulatory, corporate and industry good practice controls being implemented, alternate, additional or improved controls should be proposed and evaluated according to their feasibility, reasonableness and practicability to implement to further reduce the potential for impacts and risks associated with the activities. Woodside applies a cost and benefit analysis when evaluating additional controls and applies those that are both feasible and where the cost (safety, time, effort and financial) are not grossly disproportionate to the potential reduction in environmental impact or risk afforded by the control.
Decision Type C	***Demonstrating ALARP for highest-order ('Type C') impacts or risks*** Alternate, additional, or improved controls over and above relevant regulatory, corporate and industry good practice must be proposed and evaluated based upon a precautionary approach. Woodside ensures all feasible controls that have the potential to reduce environmental impacts and risks are implemented, when safe to do so and irrespective of the additional effort, time or financial cost associated with implementing the control.

2.7.2 Demonstration of Acceptability

The descriptions in Table 2-6 articulate how Woodside demonstrates how different risks, impacts and Decision Types identified within the EP are Acceptable.

Table 2-6: Summary of Woodside's PetDW Criteria for Acceptability

Decision Type	Demonstration of Acceptability
Decision Type A	Woodside demonstrates these risks, impacts and Decision Types are 'Broadly Acceptable' if they meet legislative requirements, industry codes and standards, applicable company requirements and industry guidelines. Further effort towards risk reduction (beyond using opportunistic measures) is not reasonably practicable without sacrifices that are grossly disproportionate to the benefit gained.
Decision Type B	Woodside demonstrates these higher order Risks, Impacts and Decision Types are 'Acceptable if ALARP' if it can be demonstrated using good industry practice and risk based analysis, 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 ecological sustainable development as defined under the EPBC Act • the internal context – the proposed controls and consequence/risk level are consistent with Woodside policies, PetDW 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).
Decision Type C	When an impact or risk has been evaluated as 'highest-order', the potential environmental impact or risk can only be deemed acceptable once the criteria for 'Type B' demonstration of acceptability detailed above has been met and: • any alternate, additional or improved controls adopted via implementing a precautionary approach (consistent with the 'Precautionary Principle' as defined within Section 3A of the EPBC Act), can demonstrate residual impacts have been lowered, such that a severity

	level of '4' becomes 'unlikely' or the severity level of '5' becomes 'highly unlikely' based upon the Woodside PetDW Risk Matrix.

2.8 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 1.10.2.2). The steps in this process are:

- Identify relevant listed threatened species and ecological communities (Section 4.6).
- Identify relevant recovery plans and threat abatement plans (Section 7.2).
- 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 Activities Program (Section 7.2).
- For those objectives/action areas applicable to the Petroleum Activities Program, identify the relevant actions of each plan, and evaluate whether impacts and risks resulting from the activity are clearly not inconsistent with that action (Section 7.2).

2.9 Environmental Performance Outcomes, Environmental Performance Standards, and Measurement Criteria

EPOs, EPSs and MC are defined to address the potential environmental impacts and risks. These are explored in Section 6.

2.10 Implement, Monitor, Review and Reporting

An implementation strategy for the Petroleum Activities Program describes the specific measures and arrangements to be implemented for the duration of the program. The strategy is based on the principles of Australian Standard/New Zealand Standard (AS/NZS) ISO 14001 Environmental Management Systems, and demonstrates:

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

The implementation strategy is presented in Section 8.

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 Activities Program under this EP. It includes the location of the activity, general details of the facility's layout, the operational details of the activity, and additional information relevant to consideration of environmental risks and impacts.

3.2 Petroleum Activities Program Overview

The operation of the Macedon field production system involves producing natural gas via subsea wells and associated subsea field infrastructure, then transporting the wet gas to an onshore processing plant via a subsea pipeline. It also includes the management of two exploration wells with wellheads that have been plugged and suspended. Production and IMMR activities for routine and unplanned activities associated with production from the wells are included in the scope of this EP.

An overview of the Petroleum Activities Program is provided in Table 3-1.

Table 3-1: Petroleum Activities Program overview

Item	Description
Production licence	WA-42-L
Pipeline licence	WA-23-PL
End of field life (EOFL)	Approximately 2033
Water depth	180 m – 60 m
Wells	• Four gas production wells • Two exploration wells with wellheads that have been plugged and suspended
Subsea infrastructure	• Four xmas trees • Four pipeline end terminations (PLETs) • Macedon pipeline end manifold (PLEM) • Macedon pipeline (Commonwealth waters component only) • Umbilical (Commonwealth waters component only) • Associated subsea infrastructure, such as rigid jumpers and infield flowlines.
Vessels	• Vessels required for IMMR activities. These may include but are not limited to: – Subsea intervention vessels, and – Subsea support vessels
Key activities	• Routine production of gas from subsea wells • Routine and non-routine IMMR of subsea infrastructure • Transportation of wet gas from the Macedon gas field to the Macedon Gas Plant • Management of exploration wells with wellheads that have been plugged and suspended

3.3 Location

The Macedon subsea wells are situated within production licence WA-42-L, located on the North West Shelf in Commonwealth waters ranging from 160 m to 180 m depth, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia (WA) (Figure 3-1).

The Macedon wet gas pipeline connects to the subsea wells via the Macedon manifold. The pipeline traverses Commonwealth and WA State waters, as well as onshore and ends at the onshore Macedon Gas Plant. Only the portion of the pipeline that is within Commonwealth waters (WA-23-PL) is within the scope of this EP. The water depths of the pipeline in Commonwealth waters range from approximately 166 m to 60 m.

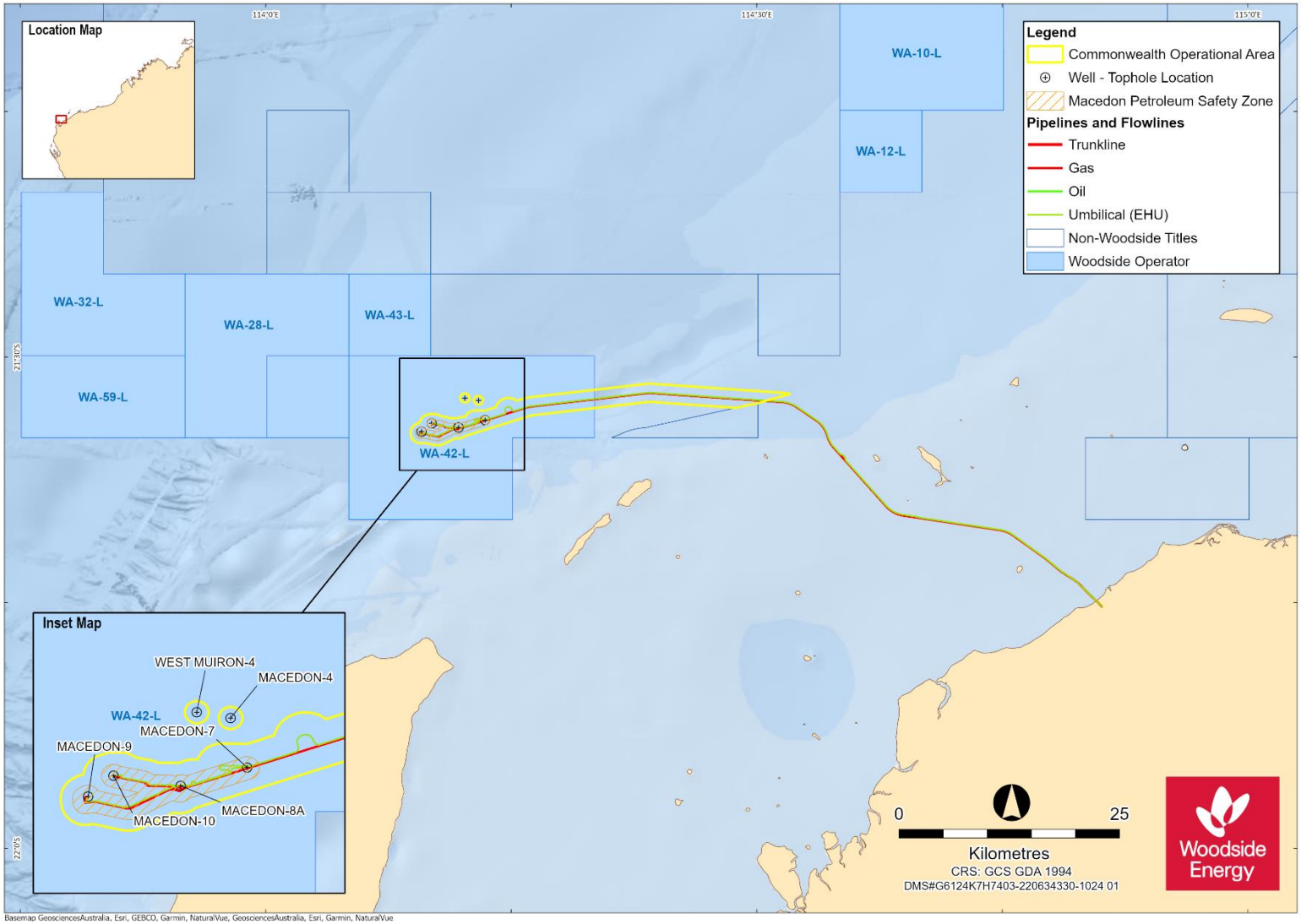

Figure 3-1: Macedon subsea infrastructure and Operational Area

3.4 Operational Area

The Operational Area defines the spatial boundary of the Petroleum Activities Program, as described, risk assessed and managed by the EP, including vessel related petroleum activities within the Operational Area. The area includes:

- Existing Macedon subsea infrastructure (including the Commonwealth waters portion of the Macedon pipeline) and an area encompassing 1000 m around the infrastructure.
- Two exploration wells with wellheads and an area of 500 m around each well.
- Vessel-related activities within the Operational Area will comply with this EP. Vessels supporting the Petroleum Activities Program operating outside of the Operational Area (e.g. transiting to and from port) are subject to applicable maritime regulations and other requirements which are not managed under this EP.

The Macedon field production system is marked on nautical maps and the wells and subsea infrastructure are surrounded by a 500-metre Petroleum Safety Zone (PSZ) (Figure 3-1).

3.5 Timing

The Macedon field production system commenced production in 2013 and operates 24 hours a day, 365 days a year.

The end of life of the Macedon field is approximately 2033. Tie-back opportunities are continuously being reviewed for Woodside's offshore facilities, which have the potential to extend the life of the Macedon field production system.

Routine and non-routine IMMR activities will occur at any time throughout the life of this EP.

Any future decommissioning, well plug and abandonment, drilling, installation, tie-back or cold commissioning activities will be the subject of future, separate EPs.

3.6 Field Layout and Description

3.6.1 Overview

The Macedon field production system infrastructure comprises two main components:

- production wells (four existing)
- subsea infrastructure (associated with existing production wells).

The Macedon field production system equipment lies in a forked arrangement, along a broadly east-west alignment spanning approximately 7 km in length. The gas pipeline stretches approximately 35 km from the Macedon manifold to the Commonwealth-State waters boundary.

3.6.2 Production Wells

The four existing subsea production wells located within WA-42-L are in water depths ranging between 160 m and 180 m. Details of the production wells covered by this EP are provided in Table 3-2.

Table 3-2: Status of production wells

Well	Block	Status	Lat / E	Long / N	Depth (m)
Macedon-7	WA-42-L	Production	-21° 33’ 50.797”	114° 13’ 24.173”	160
			E: 212444	N: 7612856	
Macedon-8A	WA-42-L	Production	-21° 34’ 17.460”	114° 11’ 47.008”	169
			E: 209662	N: 7611985	
Macedon-9	WA-42-L	Production	-21° 34’ 33.191”	114° 09’ 31.101”	179
			E: 205759	N: 7611430	
Macedon-10	WA-42-L	Production	-21° 34’ 02.297”	114° 10’ 08.567”	179
			E: 206820	N: 7612401	

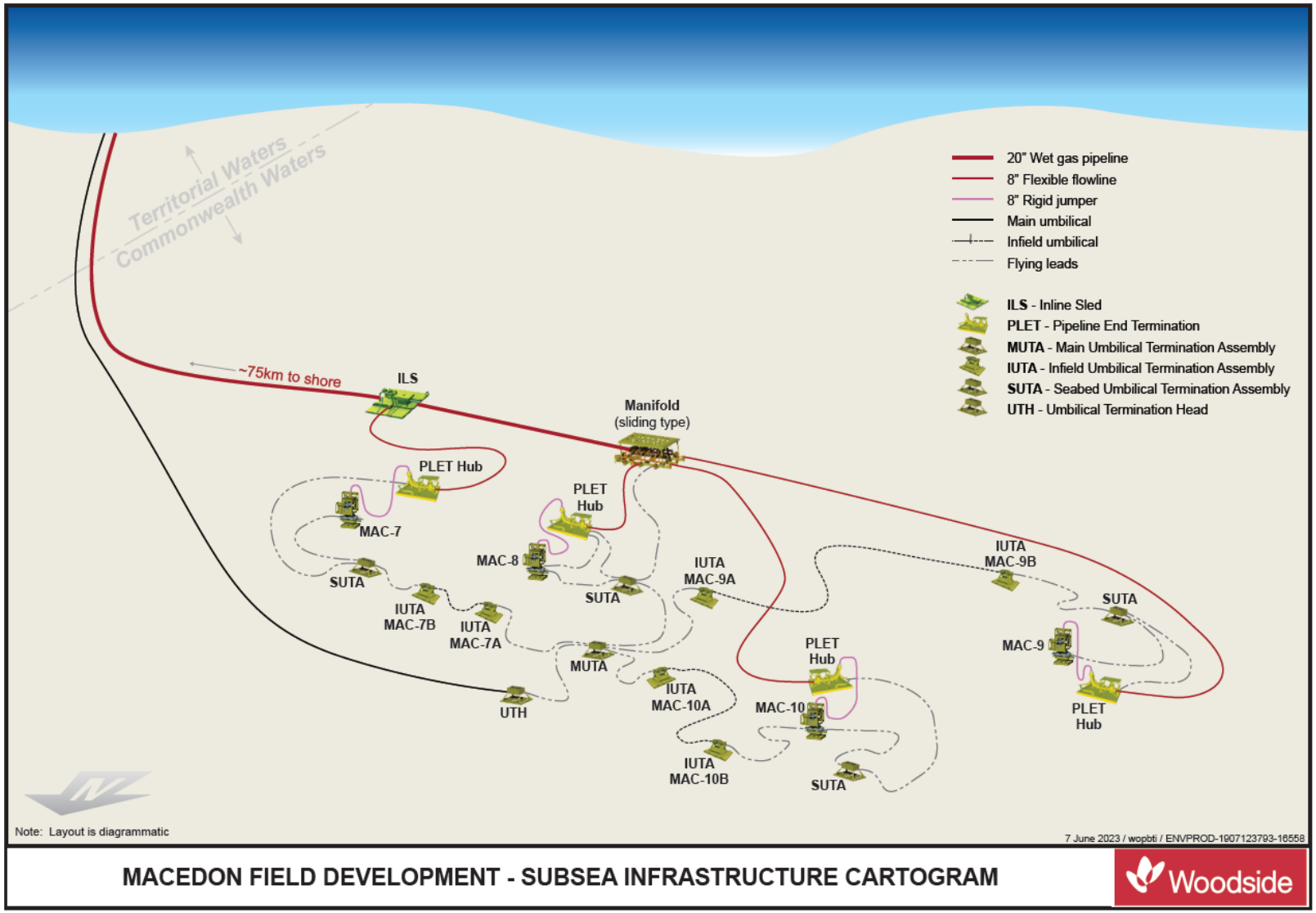

Figure 3-2: Macedon field production system subsea infrastructure

3.6.3 Subsea Infrastructure

Subsea infrastructure is defined in this EP as all of the equipment associated with Macedon gas production in WA-42-L and WA-23-PL. The inventory of subsea infrastructure within the scope of this EP is detailed in Table 3-3, Table 3-4 and Table 3-5.

The four existing subsea wells with xmas trees are each connected to a pipeline end termination assembly (PLET) which in turn is connected via an 8" (internal diameter [ID]) flexible pipe to a pipeline end manifold (PLEM), (also referred to as the Macedon Manifold). Raw gas from each of the wells is produced and fed to the Macedon manifold. The Macedon manifold is connected to the Macedon pipeline. This is a 20" diameter pipeline that carries the raw gas to shore for processing at the Macedon Gas Plant.

Power, control and chemical injection is provided to the wells by a subsea electro-hydraulic umbilical supplied from shore and managed via the Central Control Room at the Macedon Gas Plant. The main umbilical terminates at the umbilical termination hub (UTH) and is distributed to the wells via infield umbilical's connected via a main umbilical termination assembly (MUTA), infield umbilical termination assemblies (IUTAs) and seabed umbilical termination assemblies (SUTAs) (Figure 3-2).

Table 3-3: Approximate locations and water depths of xmas trees, PLETs, the PLEM and Inline Structures

Infrastructure	Easting	Northing	Depth (m)	Note
Mac-7 xmas tree	E: 212444	N: 7612856	160	-
Mac-7 PLET	E: 212433	N: 7612841	161	-
Mac-8A xmas tree	E: 209662	N: 7611985	169	-
Mac-8A PLET	E: 209676	N: 7611973	168	-
Mac-9 xmas tree	E: 205759	N: 7611430	179	-
Mac-9 PLET	E: 205748	N: 7611445	180	-
Mac-10 xmas tree	E: 206820	N: 7612401	179	-
Mac-10 PLET	E: 206811	N: 7612384	181	-
Macedon PLEM	E: 209677	N: 7611838	166	Location referred to as KP0
Inline Structure (ILS)	E: 212484	N: 7612832	160	-

Table 3-4: Approximate start and end coordinates as well as diameters and lengths of Macedon umbilicals and pipeline

Umbilical and Umbilical Termination Assemblies	Start	End	Outside Diameter (OD) (mm)	Length (m)
Main umbilical from State/Commonwealth waters boundary to UTH	E: 291047 N: 7595440	E: 209665 N: 7612008	115	40,900
Mac-7 IUTA-A to Mac-7 IUTA-B	E: 212428 N: 7612871	E: 209674 N: 7611996	115	3,020
Mac-9 IUTA-A to Mac-9 IUTA-B	E: 209625 N: 7611983	E: 205742 N: 7611409	115	4,480
Mac-10 IUTA-A to Mac-10 IUTA-B	E: 209622 N: 7612009	E: 206836 N: 7612415	115	2,950

Pipeline	Start	End	OD (mm)	Length (m)
State/Commonwealth waters boundary to Macedon manifold	E: 209687 N: 7611838	E: 209665 N: 7612008	508	40,900

Table 3-5: Outside Diameter (OD), Inside Diameter (ID), length and material type for Macedon flowlines and pipeline

Flowlines and Pipeline	OD (mm)	ID (mm)	Length (m)	Material
Mac-7 PLET to ILS	266.5	203.2	69	PA-11 barrier, HDPE sheath, PP tape layers, steel wires
Mac-8 PLET to PLEM	266.5	203.2	169	
Mac-9 to PLEM	266.5	203.2	4,727	
Mac-10 to PLEM	266.5	203.2	3,101	
State/Commonwealth waters boundary to Macedon manifold	508	476.2	40,900	steel

The Macedon subsea infrastructure has been designed, fabricated and installed in accordance with best practice and international standards. The pipelines, flowlines and wells are marked on nautical charts. Decommissioning planning for the infrastructure is described in Section 8.3.

3.6.4 Exploration Wells with Wellheads

There are two exploration wells with wellheads within block WA-42-L as described in Table 3-6. These two wells are not tied back to the Macedon field production system, but they are managed under the NOPSEMA accepted Macedon Well Operations Management Plans (WOMP).

Table 3-6: Status of non-producing wells in the Macedon field (WA-42-L)

Well	Type	Status	Wellhead Status	Lat / E	Long / N	Depth (m)	Relevant WOMP
Macedon 4	Appraisal	Plugged & Suspended	Wellhead in situ	21° 32' 38.114" E: 211713	114° 13' 00.140" N: 7615081	179	Macedon WOMP MACPN-SO-0022
West Muiron 4	Exploration	Plugged & Suspended	Wellhead in situ	21° 32' 29.713" E: 210281	114° 12' 10.561" N: 7615313	183	Macedon WOMP MACPN-SO-0022

The two wellheads are being inspected under this EP and in accordance with the WOMP, based on the assessed risk for the well. More information on planned inspection activities is provided in Section 3.7.

Decommissioning planning for these two Exploration wells Temporarily Abandoned (ETA wells) is described in Section 8.3.

All other exploration wells in licence area WA-42-L have been permanently plugged and abandoned and wellheads removed.

3.7 Production Chemicals

Chemicals are used in the Macedon field such as corrosion inhibitor for prevention of corrosion in the pipeline or scale removal chemicals used to facilitate intervention work. These may originate from the Macedon Gas Plant or from a chemical package on a support vessel.

Continuous use chemicals are those that are typically supplied to the Macedon field production system via an umbilical from the Macedon Gas Plant and continuously added into the process. These may include:

- Methanol – used infrequently as a hydrate inhibitor.
- Corrosion inhibitor – used for the prevention of corrosion in the pipeline.
- Subsea control fluid (Castrol Transaqua HT2) – used in the subsea control system. The subsea control system is an open-loop system that releases the water-based control fluid by design during valve functioning under steady state operations (less than 1 litre released per valve actuation for small valves and up to 6 litres for large valves).
- Subsea control modules, control distribution units and electrical flying leads have dielectric fluid to compensate for hydrostatic pressure and protect the electrical components in the subsea control system.

3.8 Subsea Inspection, Monitoring, Maintenance and Repair Activities

Subsea infrastructure is designed not to require significant intervention; however, inspections, monitoring, maintenance and repair (IMMR) activities are undertaken periodically throughout operations to ensure the integrity of the infrastructure and identify problems before they present a risk of loss of containment. Maintaining infrastructure integrity also supports decommissioning planning.

Subsea IMMR activities will be undertaken from a single subsea support vessel or Uncrewed Surface Vessel (USV) and may use an ROV with transponders or autonomous underwater vehicles (AUV). The required frequency and duration of subsea IMMR activities is one campaign of up to two weeks duration.

Maintenance and repair activities may require the deployment of frames/baskets which are temporarily placed on the seabed. These typically have a perforated base with a seabed footprint of <15 m^2. This temporary equipment is recovered to vessels on the completion of IMMR activities.

Typical IMMR activities are described below.

3.8.1 Inspections

Inspection of subsea infrastructure is the process of physical verification and assessment of components in order to detect changes to the as-installed location and condition by comparison to initial state following installation and previous inspections. Details of typical routine subsea infrastructure inspections/surveys and indicative frequencies are provided in Table 3-7. However other non-routine IMMR activities may be required during the life of this EP.

Scope and frequency of subsea infrastructure inspections are determined using a risk-based inspection (RBI) methodology and associated plans.

Inspections of the two exploration wellheads are determined by the WOMP. In line with the WOMP commitment relating to the well, Woodside continues to undertake detailed subsurface/technical assessments of these wells. This is to ensure that the wells are abandoned to the relevant regulatory requirements, including permanent downhole barriers.

Table 3-7: Typical subsea infrastructure inspections and frequencies

Type of Inspection/Survey	Subsea infrastructure	Purpose	Approximate Frequency
General visual inspection	All subsea infrastructure, including exploration wellheads	Check general infrastructure integrity.	Varied – every 2-5 years
Close visual inspections	All subsea infrastructure	Investigate certain subsea infrastructure components.	Varied – every 2-5 years
Cathodic protection	All subsea infrastructure	Check for corrosion and renew sacrificial anodes, if required.	Varied – every 2-5 years
Wall thickness surveys	Production and crossover manifolds, flowlines and pipelines	Monitor the condition of subsea infrastructure. (i.e., ultrasonic testing). Typically, only performed if a specific threat is identified through other means.	Possible: Once every 2-5 years.
Acoustic survey including multibeam sonar (MBES) and Side Scan Sonar (SSS)	Pipelines and spools	Identify buckling, movement, scour and seabed features. Low frequency/ intensity signals undertaken on the flowlines.	Varied – every 1-5 years
Non-destructive testing	Pipeline and manifolds (if required)	Evaluates the properties of material/items using electromagnetic, radio graphic, acoustic resonance technology, ultrasonic, or magnetic equipment.	Possible: Once every 2-5 years.
Seabed sampling surveys including minor grabs/cores	N/A	Identify benthic fauna, sediment characteristics, determine level of penetration / compaction, etc. Grabs/cores typically disturb 0.1 m^2 of seabed per sample.	Possible: Once every 5-10 years
Water sampling	N/A	Determine water quality around the pipeline	Possible: Once every 5-10 years
Anode inspections and/or replacement	Production structures	Corrosion prevention	Possible: Once every 2-5 years.

3.8.2 Monitoring

Monitoring of subsea infrastructure refers to the process of surveillance of the physical and chemical environment that a subsea system or component is exposed to in order to determine if and when damage may occur, and (where relevant) predict the rate or extent of that damage. Monitoring activities may include process composition testing, acoustic sand detectors, corrosion probes, corrosion mitigation checks, metocean and seismic monitoring, and cathodic protection testing. Other monitoring activities include process monitoring (temperature, pressure, etc.) and cyclone weather monitoring.

3.8.3 Maintenance

Maintenance activities on subsea infrastructure are those required to prevent deterioration or repair a failure of infrastructure. Typical maintenance activities include but are not limited to those described in Table 3-8.

Table 3-8: Typical maintenance activities and frequencies

Type of maintenance	Subsea infrastructure	Purpose	Approximate Frequency
Cycling of valves via control system	Xmas trees	Test functionality of technical integrity valves	Every 2 years for well barriers during operations
Scale and marine growth removal	All subsea infrastructure	To enable access	As required in order to complete a subsea intervention
Flushing of chemical hydraulic fluid lines	Hydraulic fluid lines	For repair scenarios	When required for repair
Leak and pressure testing	All subsea infrastructure	Test integrity of subsea infrastructure	Following installation of subsea infrastructure components after a repair or intervention, prior to return to service

3.8.4 Repair

Repair activities are those required when a subsea system or component is degraded, damaged or has deteriorated to a level outside of acceptance limits. Damage sustained may not necessarily pose an immediate threat to continued system integrity but may present an elevated level of risk to environment or production reliability. Due to the design of subsea infrastructure and materials used, repairs are undertaken on an as needs basis. The requirements and frequency of these repairs are dictated by the outcome of the inspection and maintenance regimes described in Section 3.8.1 and Section 3.8.3. Typical subsea repair activities include but are not limited to:

- subsea choke replacement
- chemical injection metering valve insert replacement
- Subsea control module (SCM) or electrical distribution unit (EDU)
- Router hub module (RHM) replacement
- hydraulic flying lead (HFL) replacement
- electrical flying lead (EFL) replacement
- control manifold recovery and repair
- pipeline or spool support with grout bag, mattress, anchors or rock dumping
- spool disconnection and/or replacement
- umbilical jumper replacement and/or relocation
- flowline/pipeline replacement
- scour prevention installation
- cathodic protection system replenishment/repair.

When equipment is replaced, the redundant equipment, may remain in-situ or be removed from the field. The location of redundant subsea infrastructure items is recorded as part of the ROV as left survey for that campaign and included in a database for Macedon subsea inventory (Section 6.6.2).

3.8.5 Typical Discharges During IMMR Activities

Minor environmental discharges are expected during subsea IMMR activities (e.g., during pressure/leak testing or flushing). Where practicable, flushing is performed before a subsea

component is disconnected to reduce residual hydrocarbon or chemical releases to the environment upon disconnection. Table 3-9 shows typical discharge volumes during different IMMR activities.

Table 3-9:Typical Discharge Volumes During Different IMMR Activities

IMMR Activity	Discharge	Volume Estimates
Pressure/Leak testing	Control fluid	Up to approximately 2500 L depending on the leak testing scenario
	Chemical dye	Approximately <10 L
Flushing	Residual hydrocarbon	Various depending on injection port size, component geometry and pumping rates
	Production chemicals (ie. Corrosion inhibitor or oxygen scavenger).	
Hot stab change out	Hydrocarbons	Approximately <10 L
	Control fluid	
SCM changeout	Diluted acid	Approximately 4000 L
	Control fluid	Approximately <10 L
Hydraulic flying lead and umbilical replacement	Hydraulic fluid and chemicals	Approximately <40 L
Choke change out	Hydrocarbons (gas)	Approximately <10 m^3
	Methanol (MeOH)	Approximately 280 L
	Acid release	Approximately 2000 L
Flowline or spools repair, replacement and recovery	Hydrocarbons (gas)	Volume would vary depending on the section of flowline or spool that requires repair. The largest volume is expected to be approximately 154 m^3 which would occur during a worst-case flowline replacement.
	Corrosion inhibitor	Volume would vary depending on the section of flowline or spool that requires repair. The largest volume is expected to be less than 10 L which would occur during a worst-case flowline replacement.

3.8.6 Scale and Marine Growth Removal

Scale and marine growth removal is required for subsea intervention operations and is typically undertaken by ROV. The different techniques used are described in Table 3-10.

Table 3-10: Scale and marine growth removal techniques

Activity / Equipment	Description
Water jetting	Uses high pressure water stream to remove marine growth.
Brush systems	Uses brushes attached to an ROV to physically remove marine growth.
Acid (typically a light acid solution)	Chemically dissolves calcium deposits. Volume used is dependent on the amount of scale or marine growth to remove.
Sand/abrasive blasting	Additional cleaning to allow close visual inspections.

3.8.7 Sediment Relocation and Seabed Disturbing Activities

If sediment builds up around a pipeline or other subsea infrastructure, an ROV-mounted suction pump/dredging unit may be used to relocate the sediment to allow inspection/works to be undertaken. This activity is limited to the relocation of small amounts of sediment material in the

immediate vicinity of the subsea infrastructure (i.e., within the existing footprint). Sediment relocation typically results in minor seabed disturbance and some localised turbidity.

Other IMMR activities may involve seabed disturbance. If during IMMR activities it is determined that anode skids are required for corrosion protection, they are placed on the seabed using a support vessel crane. A typical anode skid has a seabed footprint of about 8m^2. Similarly, maintenance and repair activities may require the deployment of frames/baskets which are temporarily placed on the seabed. These typically have a perforated base with a seabed footprint of <15 m^2.

3.8.8 Pigging Operations

Pigging of the pipeline may be required for a variety of reasons, e.g., inspection, maintenance, repair or to facilitate modifications. Should pigging be required, provision has been made for the installation of a temporary subsea pig launcher. The pipeline pigging system including the launcher, receiver and the pipelines is designed for maximum operation pressure of the production system.

The two closed valves on the manifold where the pig launcher is installed remain closed until the pig launcher installation. A seal test is completed creating a sealed process during routine pigging operations.

3.9 Subsea Support Vessels

Subsea support vessels used to support routine IMMR activities may range in length from 35 m to 120 m and include multi-purpose support vessels and dive support vessels. IMMR activities may be undertaken 24-hours a day.

A single subsea support vessel or Uncrewed Surface Vessel (USV) may be required once per year for up to two weeks, depending upon operational requirements. The timing and duration that a vessel is in the Operational Area varies depending on the nature of the activity, operational requirements, vessel schedules, capability and availability.

Typical subsea support vessels use a dynamic positioning (DP) system in combination with satellite navigation to allow maneuverability, maintain position and avoid anchoring when undertaking works due to proximity of subsea infrastructure. Subsea support vessels are equipped with anchors which may be deployed in the event of an emergency. All subsea support vessels will use marine diesel oil or marine gas oil and will be provisioned in port. There will be no refueling on site.

Table 3-11: Typical IMMR Vessel Specifications

Attribute	Detail
Type	Operational Support Vessel
Length (overall)	92.95 m
Breadth	19.70 m
Depth	7.7 m
Gross Tonnage	4926 Te
Accommodation	100

3.10 Chemical Selection, Assessment and Approval

Operational chemicals required by the Petroleum Activities Program are selected and approved in accordance with Woodside's chemical selection and assessment guideline. This process is used to reduce potential impacts and risks associated with chemical use to ALARP by selecting chemicals with the lowest practicable environmental impacts and risks, subject to technical constraints.

Environmental Selection Criteria

Woodside's process for selecting and assessing chemicals 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 (background on the OCNS scheme is provided below).

- where operational chemicals with an OCNS rating of Gold/Silver/E/D and no OCNS substitution or product warning are selected, or a substance is considered to pose little or no risk (PLONOR) to the environment, no further control is required. Such chemicals do not represent a significant impact on the environment under standard use scenarios and therefore are considered ALARP and acceptable.
- if other non-rated chemicals are required, or rated chemicals with a substitution warning, chemical selection process and ALARP justifications are undertaken where required.

The ALARP assessment may consider chemical toxicity, biodegradation, and bioaccumulation potential, using industry standard classification criteria. If a product has no specific ecotoxicity, biodegradation, or bioaccumulation data available, these options are considered:

- environmental data for analogous products can be referred to where chemical ingredients and composition are largely identical, or
- environmental data may be referenced for each separate chemical ingredient (if known) within the product.

Background Overview of OCNS

The OCNS Scheme 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 listed 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 one of two schemes (as shown in Figure 3-3):

- **HQ Colour Band:** Gold, Silver, White, Blue, Orange and Purple (listed in order of increasing environmental hazard); or
- **OCNS Grouping:** E, D, C, B or A (listed in order of increasing environmental hazard). Applied to inorganic substances, hydraulic fluids and pipeline chemicals only.

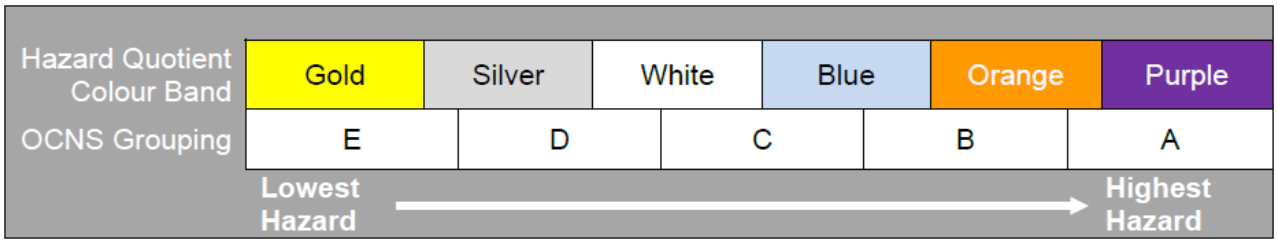

Figure 3-3: OCNS ranking scheme

4. DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

In accordance with Regulations 21(2) and 21(3) of the Environment Regulations, this section describes the environment that may be affected (EMBA) by the activity described in Section 3, including details of the particular relevant values and sensitivities of the environment, which were used for the risk assessment.

The EMBA is the largest spatial extent where the activity could have an environmental consequence on the surrounding environment. For this EP, the EMBA is the combined potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the event of the following scenarios (Section 7.1.1):

- Scenario 1: Hydrocarbon release from a single tank (125 m^3) caused by a vessel collision at the Macedon Well centre over 21 days

The ecological impact thresholds used to delineate the EMBA are defined in Section 6.7.1.2. The EMBA also includes any areas that are predicted to experience shoreline contact with hydrocarbons above threshold concentrations.

Woodside recognises that hydrocarbons may be visible beyond the EMBA at lower concentrations than the ecological impact thresholds defined in Section 6.7.1.2. These visible hydrocarbons are not expected to cause ecological impacts. In respect of this, an additional socio-cultural EMBA is defined, as the potential spatial extent within which social-cultural impacts may occur from changes to the visual amenity of the marine environment. Receptors relevant to the socio-cultural EMBA include Commonwealth and State marine protected areas, National and Commonwealth Heritage Listed places, areas of tourism and recreation, and commercial and traditional fisheries. The EMBA and socio-cultural 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 many theoretical paths, integrated over the full duration of the simulations under various metocean conditions.

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

Hydrocarbon Type	EMBA1	Socio-cultural EMBA1	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 guidance note: A652993, April 2019).	
Dissolved	50 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). As dissolved hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are associated with ecological impacts. Therefore, dissolved hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		10 ppb This low exposure value establishes the planning area for scientific monitoring (based on potential for exceedance of water quality triggers) (NOPSEMA guidance note: A652993, April 2019). This area is described further in 21. In the event of a spill, DNP will be notified of AMPs which may be
Entrained	100 ppb		

	This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). As entrained hydrocarbons are within the water column and not 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.		contacted by hydrocarbons at this threshold.
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 6.7*

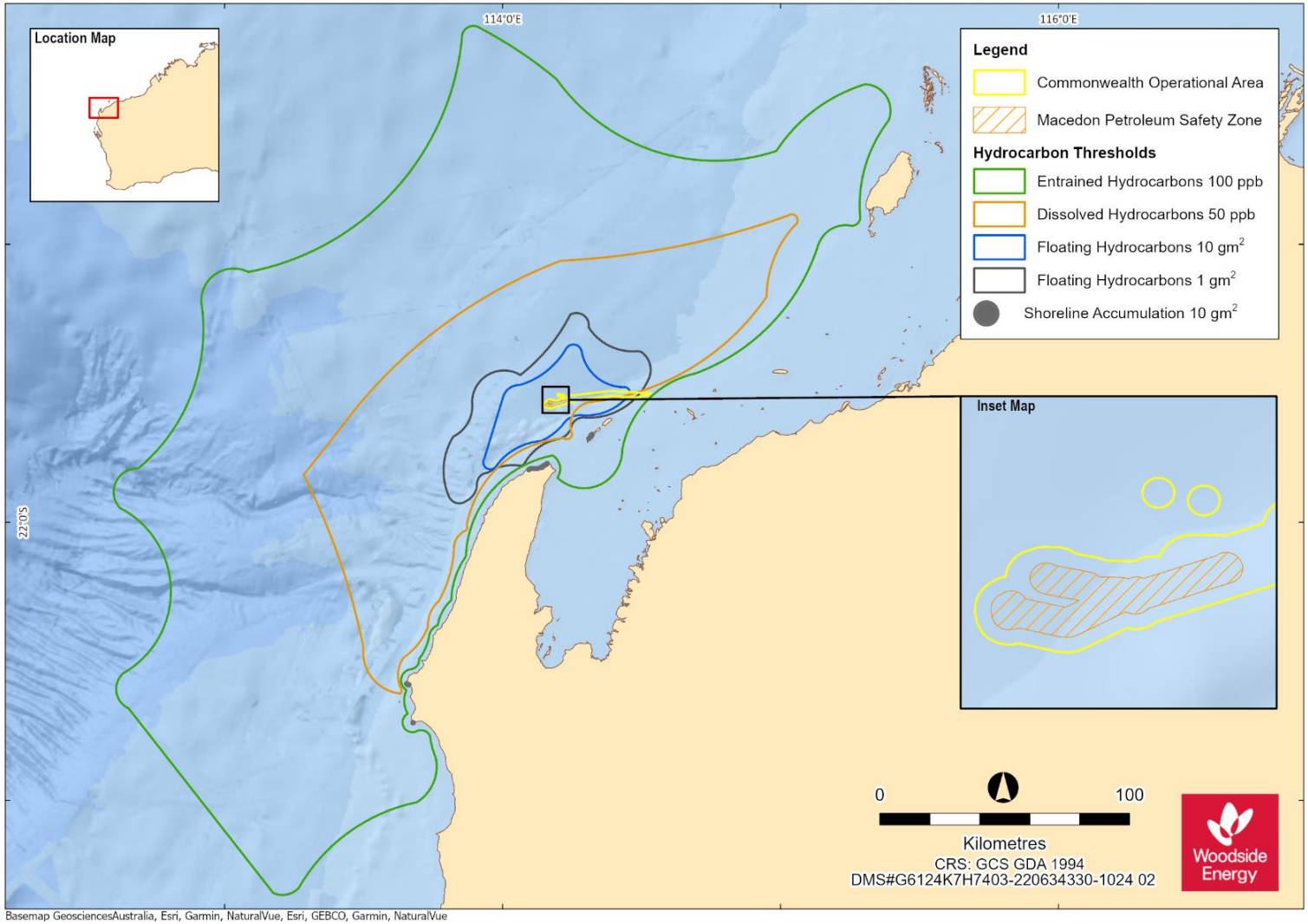

Figure 4-1 Environment that may be affected by the Petroleum Activities Program

4.2 Regional Context

The Operational Area is located in Commonwealth waters within the North-west Marine Region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0) (Commonwealth of Australia, 2006), in water depths of 60 to 180 m. The wet gas pipeline and umbilical in Commonwealth waters are approximately 24 km in length, extending up to the State-Commonwealth waters boundary.

Within the NWMR, the Operational Area lies within the Northwest Shelf Province and the Central Western Shelf Transition (Figure 4-2). The EMBA (not pictured) also overlaps the Northwest Province and the Central Western Transition within the North-west Marine Region. Appendix K Master Existing Environment summarises the characteristics for the relevant marine bio-regions.

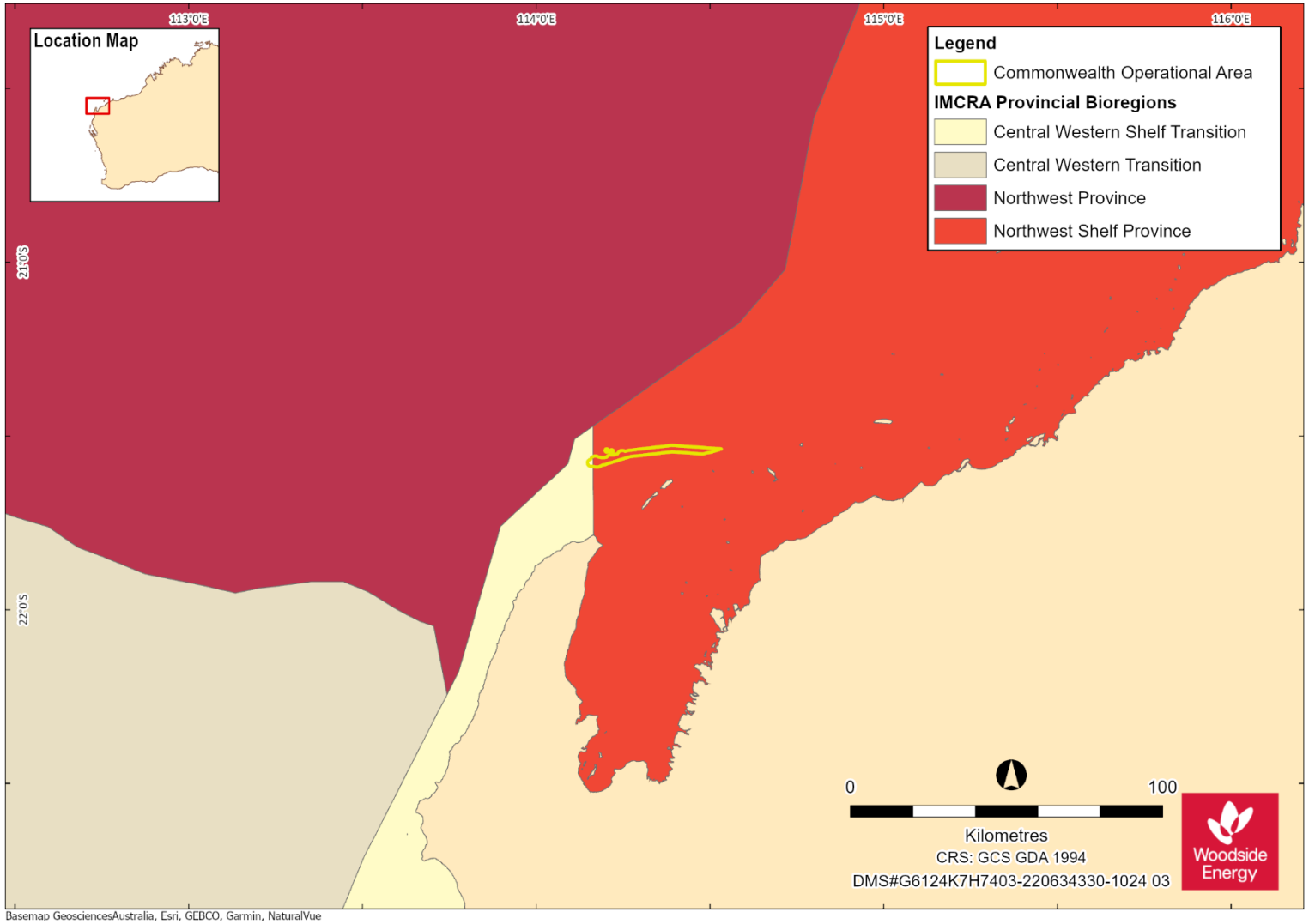

Figure 4-2 Location of the Operational Area and relevant marine bio-region

4.3 Matters of National Environmental Significance (EPBC Act)

Table 4-2 summarises the MNES overlapping the Operational Area and EMBA, respectively, according to Protected Matters Search Tool (PMST) results (Appendix C). It should be noted that the EPBC Act PMST is a general database that conservatively identifies areas in which protected species have the potential to occur.

Additional information on these MNES is provided in subsequent sections of this chapter and described in detail in Appendix K Master Existing Environment.

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

MNES	OA	EMBA	Relevant Section
World Heritage Properties	0	1	Section 4.9.1.10
National Heritage Places	0	1	Section 4.9.1.10
Wetlands of International Importance (Ramsar)	0	0	N/A
Commonwealth Marine Area	1	1	Whole of Section 4
Listed Threatened Ecological Communities	0	0	N/A
Listed Threatened Species	24	47	Section 4.6
Listed Migratory Species	40	60	Section 4.6

4.4 Physical Environment

The Operational Area lies on the outer continental shelf in waters approximately 60 to 180 m deep.

The bathymetry within the Operational Area is generally flat, which is consistent with the broader NWS Province and Central Western Shelf Transition regions (Baker et al. 2008).

A description of the physical environment consistent with the North West Marine Region is described in detail in Appendix K Master Existing Environment.

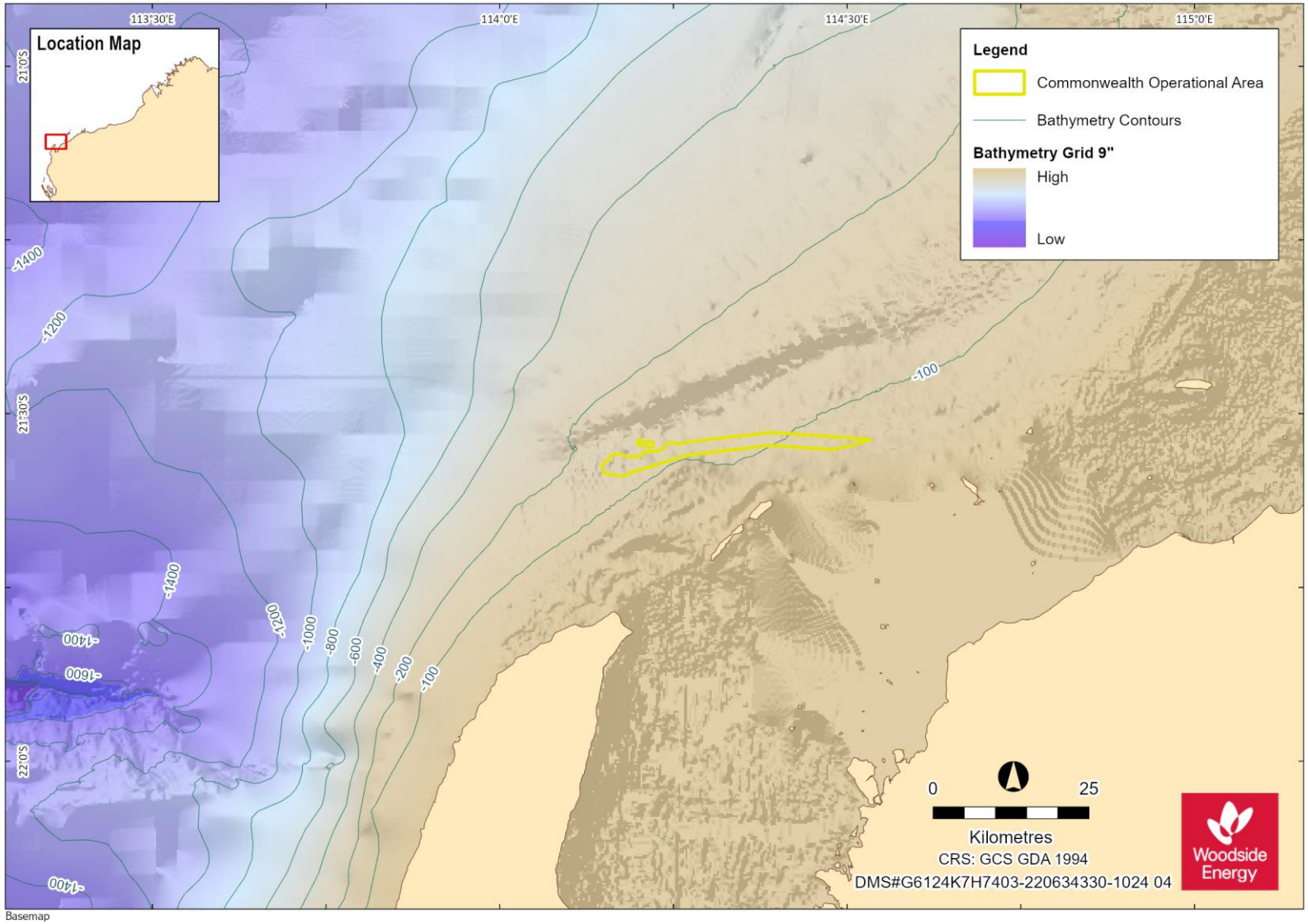

Figure 4-3 Bathymetry of the Operational Area

4.5 Habitats and Biological Communities

Sediments in the Operational Area are expected to be comprised primarily of soft sediment i.e., mud and calcareous clay and calcareous gravel, sand and silt. A survey conducted in 2011 on the benthic environment along the Macedon pipeline route supported this and suggested that the seabed is primarily composed of soft sediments with silt to gravel sized particles and sparse sedimentary material cover (BHP, 2011).

Although hard substrates are not known to occur within the Operational Area they have potential to occur. This is because the NWMR hosts diverse benthic communities and substrate also occurs on the Ancient coastline at 125 m depth contour Key Ecological Feature (KEF) and the Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF, which overlap the Operational Area.

Key habitats and ecological communities within the EMBA are identified and described in Table 4-3. A detailed description of habitats and biological communities is included in Appendix K Master Existing Environment.

Table 4-3: Habitats and Communities within the EMBA

Habitat/Community	Key locations within the EMBA
Seabed characteristics	
Ancient Coastline at 125 m Depth Contour	The Ancient Coastline at 125 m Depth Contour KEF, overlaps part of the Operational Area (DAWE 2019a). Areas of this KEF comprise hard substrate and may occur within the Operational Area. Hard substrate seabed habitats present within the Operational Area are likely to support filter feeding biota such as sponges and gorgonians (sea whip and fans), as reported for hard substrate seabed habitat in similar water depths along this outer shelf area of the NWS.
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF, overlaps part of the Operational Area. Areas of this KEF comprise hard substrate and may occur within the Operational Area. Hard substrates of the canyons' sides provide habitat for deepwater fish and other species.
Commonwealth waters adjacent to Ningaloo Reef	Commonwealth waters adjacent to Ningaloo Reef KEF, is located 8.5 km southwest of the Operational Area. The KEF is comprised of a system of coral formations interspersed with coral sand channels. The reef provides habitat for filter feeding communities of sponges, soft corals and gorgonians.
Exmouth Plateau	The Exmouth Plateau KEF is located 91 km north-west of the Operational Area. The KEF has a rough surface which is steep and intersected by large canyons in the north, steep and smooth in the west and gently sloping in the south.
Continental Slope Demersal Fish Communities	The Continental Slope Demersal Fish Communities KEF is located 8 km west of the Operational Area. The KEF has high diversity compared to elsewhere along the Australian continental slope, supporting hundreds of fish species many of which are endemic to the region.
Marine primary producers	
Coral	Muiron Islands (8.7 km south) Ningaloo Coast (3 km south) Barrow Island (114.6 km north)
Seagrass beds and macroalgae	Muiron Islands (8.7 km south) Ningaloo Coast (3 km south) Barrow Island (114.6 km north)
Mangroves	Ningaloo Coast (3 km south)
Other communities and habitats	
Plankton	Plankton within the Operational Area and EMBA are expected to be representative of the wider NWMR, as detailed in the Master Existing Environment.

	Peak primary productivity within the EMBA occurs in late summer/early autumn, along the shelf edge of the Ningaloo Reef. It also links to a larger biologically productive period in the area that includes mass coral spawning events, peaks in zooplankton and fish larvae abundance (CALM 2005a), with periodic upwelling throughout the year. Further detail regarding productivity at other notable locations within the EMBA (e.g., North-west Cape) is provided in the Master Existing Environment.
Pelagic and demersal fish populations	Pelagic and demersal fish populations within the Operational Area and EMBA are expected to be representative of the NWMR (described in the Master Existing Environment). Particular features overlapping the Operational Area that are known to support pelagic and demersal fish populations include the Ancient Coastline at 125 m Depth Contour KEF and Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF. Features outside the Operational Area but within the EMBA which support fish populations include the Demersal Fish Communities KEF and the Commonwealth Waters adjacent to Ningaloo Reef KEF. These features are described in the Master Existing Environment. Notably, the presence of subsea infrastructure associated with the Macedon field production system has resulted in the development of demersal fish communities that would otherwise not occur in the Operational Area due to the hard substrate the infrastructure provides in an otherwise generally featureless, soft sediment that is present (McLean et al. 2017).
Epifauna and infauna	Filter feeders such as sponges, ascidians, soft corals, and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA 2008). Filter feeders within the EMBA are expected to be representative of the NWMR, with notable areas of high sponge diversity occurring in the Commonwealth waters of Ningaloo Marine Park (see Master Existing Environment, Section 5.4). Discrete areas of hard substrate hosting sessile filter feeding communities may also be associated within the Ancient Coastline at 125 m Depth Contour KEF and Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF, which overlaps the Operational Area. Filter feeder communities within the Operational Area are also present on the subsea infrastructure, which provides hard substrate for attachment in an otherwise generally featureless, soft and sandy substrate (McLean et al. 2017).

4.6 Protected Species

A total of 159 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 105 species were identified as potentially occurring within the Operational Area. These results inform the assessment of impacts form planned and unplanned events (Section 6.6 and 6.7). It should be recognised that the PMST is a general database that conservatively identifies areas in which protected species have the potential to occur.

Biologically important areas (BIAs) are defined by the Marine Bioregional Plan for the North-west Marine Region as areas of spatial aggregation of individuals within a species known to demonstrate biologically important behaviour (DCCEEW, 2023). Examples of such behaviours include breeding, foraging, resting or migration.

Species identified as potentially occurring within the Operational Area and EMBA, and BIAs or Habitat Critical to their Survival (Habitat Critical) that overlap the Operational Area and EMBA, are listed in Table 4-4 to Table 4-13. A description of species is included in Appendix K Master Existing Environment.

Figures 4-4 to 4-11 show the spatial overlap between the Operational Area and relevant BIAs and Habitat Critical areas.

4.6.1 Fish, Sharks and Rays

A total of 48 EPBC Listed fish species have been identified as potentially occurring within the Operational Area or EMBA. Nine of these species are listed as ‘threatened’ along with an additional seven listed as ‘migratory’ under the EPBC Act. There are 32 species shown in the PMST results

that have not been included within Table 4-4, these included a variety of pipefish and sea dragons that do not have a threatened or migratory listed status under the EPBC Act.

One BIA for fish, sharks and rays has been identified within the Operational Area and an additional BIA overlaps the EMBA as shown in Figure 4-4.

These are both foraging BIAs for the Whale Shark and are fully described in Table 4-5.

Table 4-4: Threatened and Migratory Fish, Shark and Ray Species predicted to occur within the Operational Area and EMBA

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Species or species habitat known to occur within area.	Species or species habitat known to occur within area.
Rhincodon typus	Whale shark	Vulnerable	Migratory	Foraging, feeding or related behaviour known to occur within area.	Foraging, feeding or related behaviour known to occur within area.
Carcharodon carcharias	White shark	Vulnerable	Migratory	Species or species habitat known occur within area.	Species or species habitat known to occur within area.
Carcharias taurus (west coast population)	Grey nurse shark (west coast population)	Vulnerable	N/A	Species or species habitat may occur within area.	Species or species habitat known to occur within area.
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Species or species habitat known occur within area	Species or species habitat known to occur within area.
Milyeringa veritas	Cape Range Cave Gudgeon	Vulnerable	N/A	N/A	Species or species habitat known to occur within area.
Ophisternon candidum	Blind Cave Eel	Vulnerable	N/A	N/A	Species or species habitat known to occur within area.
Sphyrna lewini	Scalloped Hammerhead	Conservation Dependent	N/A	Species or species habitat likely to occur within area	Species or species habitat known to occur within area.
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Species or species habitat likely to occur within area.	Species or species habitat likely to occur within area.
Manta birostris	Giant manta ray	N/A	Migratory	Species or species habitat known to occur within area.	Species or species habitat known to occur within area.

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Isurus paucus	Longfin mako	N/A	Migratory	Species or species habitat likely to occur within area.	Species or species habitat likely to occur within area.
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat likely to occur within area.
Manta alfredi	Reef manta ray	N/A	Migratory	Species or species habitat known to occur within area.	Species or species habitat known to occur within area.
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Species or species habitat likely to occur within area.	Species or species habitat likely to occur within area.
Lamna nasus	Porbeagle	N/A	Migratory	N/A	Species or species habitat may occur within area.

Table 4-5: Fish, Shark and Ray BIAs within the Operational Area and EMBA

Species	BIA type	Approximate Distance and Direction of BIA from Operational Area (km)
Whale Shark	Foraging: Northward from Ningaloo along 200 m isobath	Overlaps
	Foraging: Ningaloo Marine Park and adjacent Commonwealth waters	27.3 km south-west

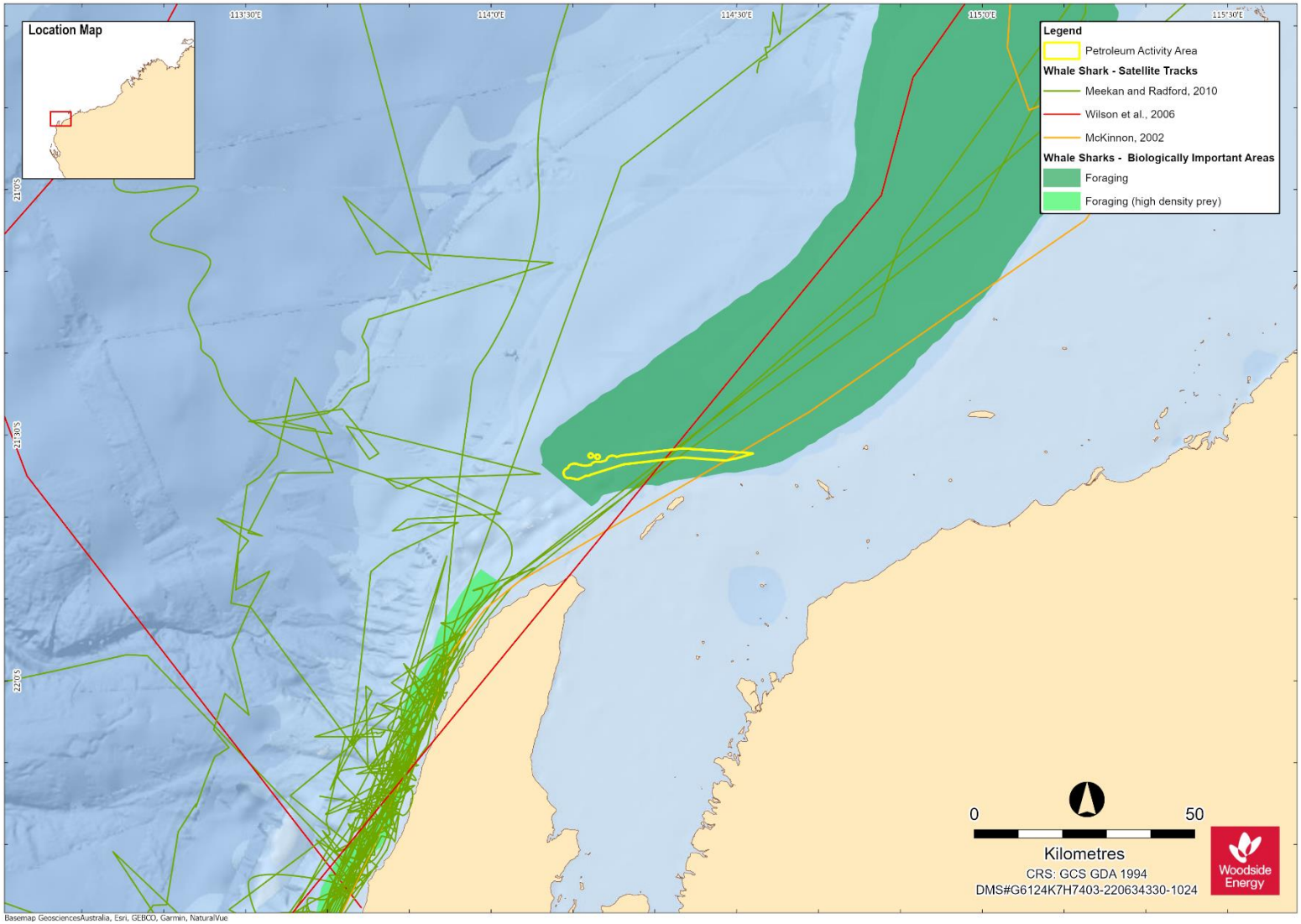

Figure 4-4 Whale Shark BIAs adjacent to the Operational Area

4.6.2 Marine Reptiles

A total of 21 EPBC listed marine reptile species have been identified as potentially occurring within the Operational Area or EMBA. Seven of these species are listed under the EPBC Act as 'threatened', five of which are also listed as 'migratory'. There are 14 species shown in the PMST results that have not been included within Table 4-6, these include a variety of sea snakes that do not have a threatened or migratory listed status under the EPBC Act.

Foraging, nesting and internesting BIAs for the Green Turtle, Loggerhead Turtle, Flatback Turtle and the Hawksbill Turtle are overlapped by or adjacent to the Operational Area or within the EMBA as shown in Figure 4-5and described in Table 4-7.

Habitat critical to the survival of the Green Turtle, Loggerhead Turtle, Flatback Turtle and the Hawksbill Turtle is overlapped by, or adjacent to the Operational Area as shown in Figure 4-6 and described in Table 4-8.

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Natator depressus	Flatback turtle	Vulnerable	Migratory	Congregation or aggregation known to occur within area.	Breeding known to occur within area.
Chelonia mydas	Green turtle	Vulnerable	Migratory	Species or species habitat known to occur within area.	Breeding known to occur within area.
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Congregation or aggregation known to occur within area.	Breeding known to occur within area.
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Species or species habitat known to occur within area.	Foraging, feeding or related behaviour known to occur within area.
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Congregation or aggregation known to occur within area.	Breeding known to occur within area.
Aipysurus apraefrontalis	Short-nosed sea snake	Critically Endangered	N/A	Species or species habitat may occur within area.	Species or species habitat likely to occur within area.
Aipysurus foliosquama	Leaf-scaled sea snake	Critically Endangered	N/A	N/A	Species or species habitat known to occur within area.

Table 4-7: Marine turtle BIAs within the EMBA

Species	BIA type and location	Approximate distance and direction of BIA from Operational Area (km)
Flatback turtle	Nesting: Barrow Island	108.2 km north-east
	Internesting buffer Thevenard Island – South coast	Overlaps
	Internesting buffer: Montebello Island, Hermite Island, NW Island, and Trimouille Island	74 km north-east

	Foraging: Barrow Island	108.2 km north-east
	Mating: Barrow Island	108.2 km north-east
Green turtle	Nesting: North West Cape	25.4 km south
	Nesting: North and South Muiron Island	8.7 km south
	Nesting: West Coast Middle Island and North and West Coast Barrow Island	107.4 km north-east
	Internesting buffer: North and South Muiron Island	Overlaps
	Internesting buffer: North West Cape	Overlaps
	Internesting buffer: West Coast Middle Island and North and West Coast Barrow Island	82.8 km north-east
	Internesting buffer: Montebello Islands	127.9 km north-east
	Internesting buffer: Montebello Island, Trimoulle Island, Hermite Island and NW Islands	133.1 km north-east
	Internesting: Barrow Island	108.2 km north-east
	Foraging: Inshore tidal and shallow subtidal areas around Barrow Island	108.2 km north-east
	Mating: West Coast Middle Island and North and West Coast Barrow Island	107.4 km north-east
	Basking: West Coast Middle Island and North and West Coast Barrow Island	107.4 km north-east
Hawksbill turtle	Nesting: Ningaloo coast and Jurabi coast	18.5 km south-west
	Nesting: Barrow Island	106.8 km north-east
	Internesting buffer: Ningaloo coast and Jurabi coast	Overlaps
	Internesting buffer: Thevenard Island	23.4 km east
	Internesting buffer: Barrow Island	84.9 km north-east
	Internesting buffer: Lowendal Island Group	126.4 km north-east
	Internesting buffer: Montebello Island, Trimoulle Island, Hermite Island and NW Islands	133.1 km north-east
	Internesting buffer: Montebello Island, Trimoulle Island and NW Islands	135.4 km north-east
	Foraging: Shallow water coral reef and artificial reef (pipeline) habitat	108.2 km north-east
	Mating: Barrow Island	108.2 km north-east
Loggerhead turtle	Nesting: Muiron Island	8.7 km south
	Nesting: Ningaloo coast and Jurabi coast	18.5 km south-west

	Internesting buffer: Ningaloo coast and Jurabi coast	Overlaps
	Internesting buffer: Muiron Island	Overlaps
	Internesting buffer: Lowenthal Island	134.4 km north-east
	Internesting buffer: Montebello Islands	137.2 km north-east

Table 4-8: Habitat Critical to the Survival of Marine Turtles occurring within the EMBA

Species	Genetic stock	Nesting locations	Approximate distance and direction from Operational Area (km)	Inter-nesting buffer	Nesting period	Hatching period
Green turtle	NWS	Barrow Island, Montebello Islands, Serrurier Island and Thevenard Island *Additional critical habitat is located 1.7 km south from the Operational Area in the Exmouth Gulf and Ningaloo coast.	Overlaps	20 km	Nov–Mar (peak: Dec–Feb)	Jan–May (peak: Feb–Mar)
Loggerhead turtle	WA	Exmouth Gulf and Ningaloo coast	1.7 km south	20 km	Nov–Mar (peak: Jan)	Jan–May
Flatback Turtle	Pilbara	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island	Overlaps	40 km	Oct–Mar (peak: Nov–Jan)	Feb–Mar
Hawksbill turtle	Western Australia	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	Overlaps	20 km	All year (peak: Oct–Jan)	All year (peak: Dec–Feb)

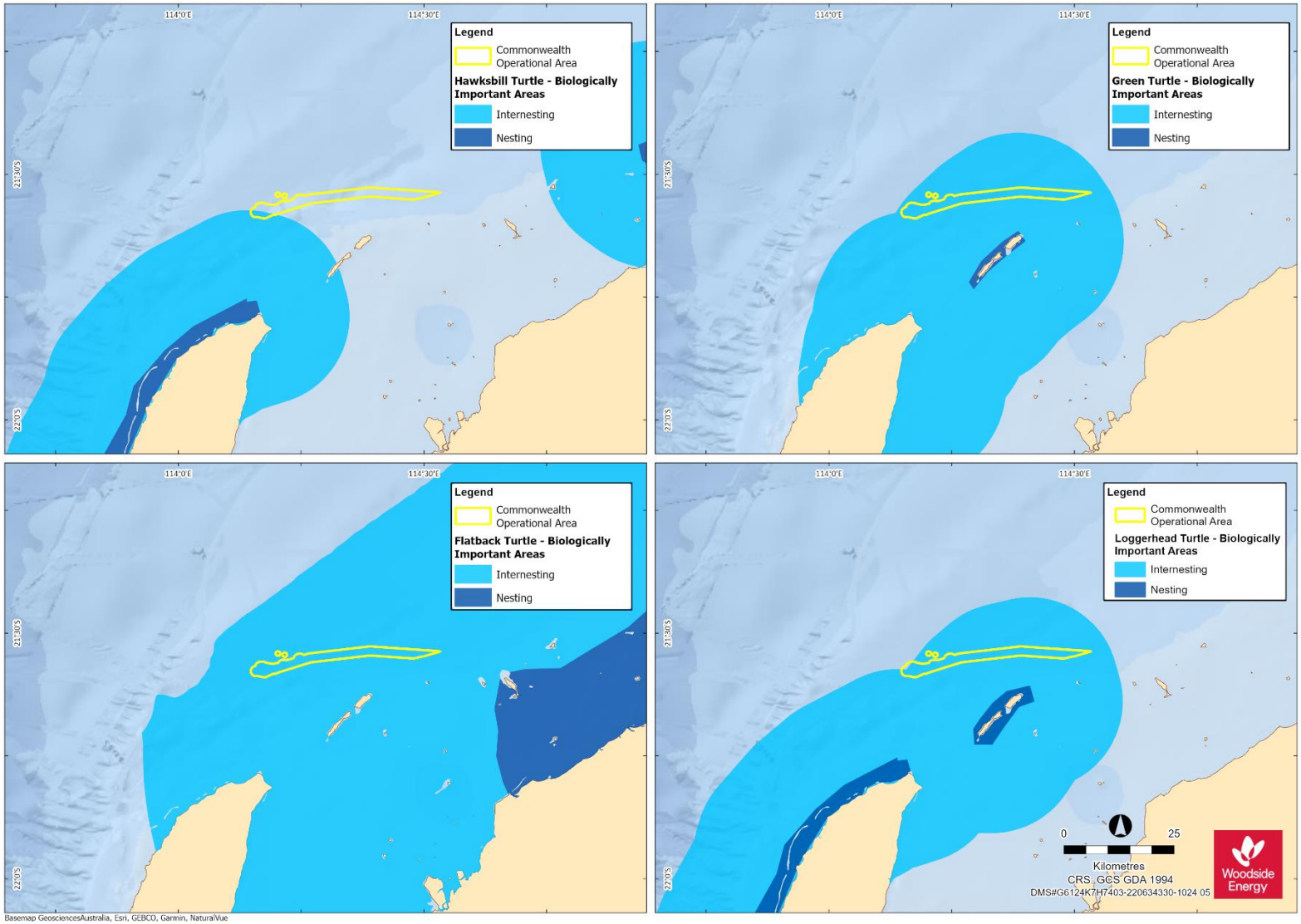

Figure 4-5 Marine turtle BIAs overlapping and adjacent to the Operational Area

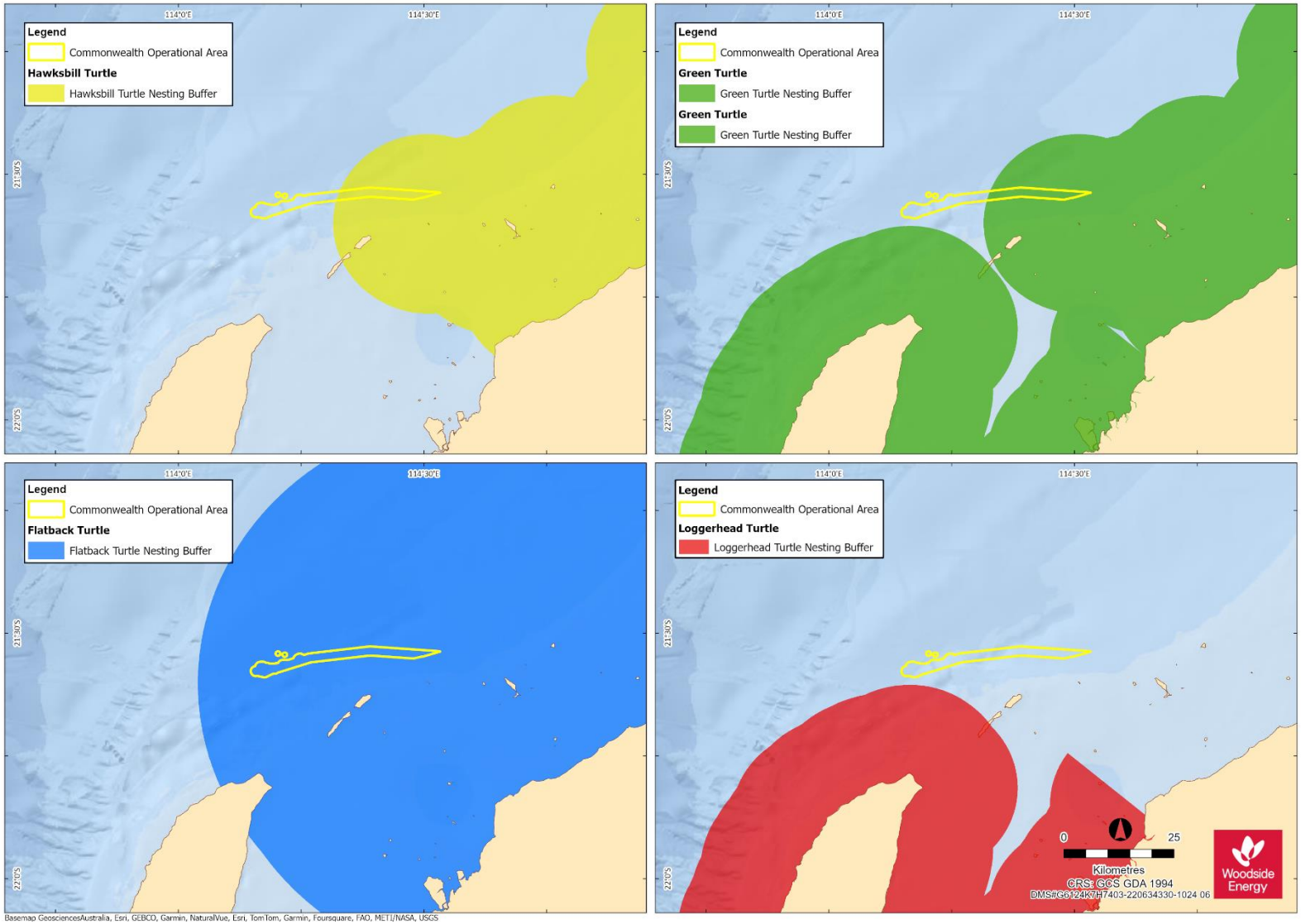

Figure 4-6 Habitat Critical to the Survival of Marine Turtles overlapping and adjacent to the Operational Area

4.6.3 Marine Mammals

A total of 41 EPBC Listed marine mammal species have been identified as potentially occurring within the Operational Area or EMBA. Four of these species are listed under the EPBC Act as 'threatened' and an additional nine are listed as 'migratory'. There are 28 species shown in the PMST results that have not been included within Table 4-9, these include a variety of whale and dolphin species that do not have a threatened or migratory listed status under the EPBC Act.

The humpback whale migration BIA overlaps with the Operational Area while foraging and migration BIAs for the Pygmy Blue Whale and Dugong overlap with the EMBA, as shown in Figures 4-7, 4-8 and 4-10 and described in Table 4-10.

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Species or species habitat likely to occur within area.	Foraging, feeding or related behaviour likely to occur within area.
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Species or species habitat likely to occur within area.	Foraging, feeding or related behaviour likely to occur within area.
Balaenoptera musculus	Pygmy Blue whale	Endangered	Migratory	Species or species habitat likely to occur within area.	Migration route known to occur within area.
Eubalaena australis	Southern right whale	Endangered	Migratory	Species or species habitat likely to occur within area.	Species or species habitat likely to occur within area.
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Breeding known to occur within area.	Breeding known to occur within area.
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Species or species habitat likely occur within area.	Species or species habitat likely to occur within area.
Orcinus orca	Killer whale	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat may occur within area.
Physeter macrocephalus	Sperm whale	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat may occur within area.
Tursiops aduncus (Arafura/Timor Sea populations)	Spotted bottlenose dolphin	N/A	Migratory	Species or species habitat known occur within area.	Species or species habitat known to occur within area.
Sousa sahulensis	Australian Humpback Dolphin	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat known occur within area.
Orcaella heinsohni	Australian Snubfin Dolphin	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat known occur within area.
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	N/A	Species or species habitat likely to occur within area.
Dugong dugon	Dugong	N/A	Migratory	N/A	Breeding known to occur within area.

Table 4-10: Marine mammal BIAs within the EMBA

Species	BIA type	Approximate distance and direction from Operational Area (km)
Pygmy Blue whale	Migration (Augusta to Derby)	14.9 km west
	Foraging (Ningaloo)	36.3 km south-west
Humpback whale	Migration (north and south) (south of Shark Bay, north to Kimberly Region)	Overlaps
	Resting (Exmouth Gulf)	23.3 km south
Southern Right Whale	Reproduction (Ningaloo and Exmouth Gulf)	16.7 km south
	Migration (south of Ningaloo)	
Dugong	Calving (Exmouth Gulf)	16.6 km south
	Breeding (Exmouth Gulf)	
	Foraging (high density seagrass beds) (Exmouth Gulf)	
	Nursing (Exmouth Gulf)	

Table 4-11: Marine mammal habitat critical to the survival within the EMBA

Species	Habitat Critical to the Survival Type	Approximate distance and direction from Operational Area (km)
Southern Right Whale	Reproduction (Ningaloo and Exmouth Gulf)	16.7 km south

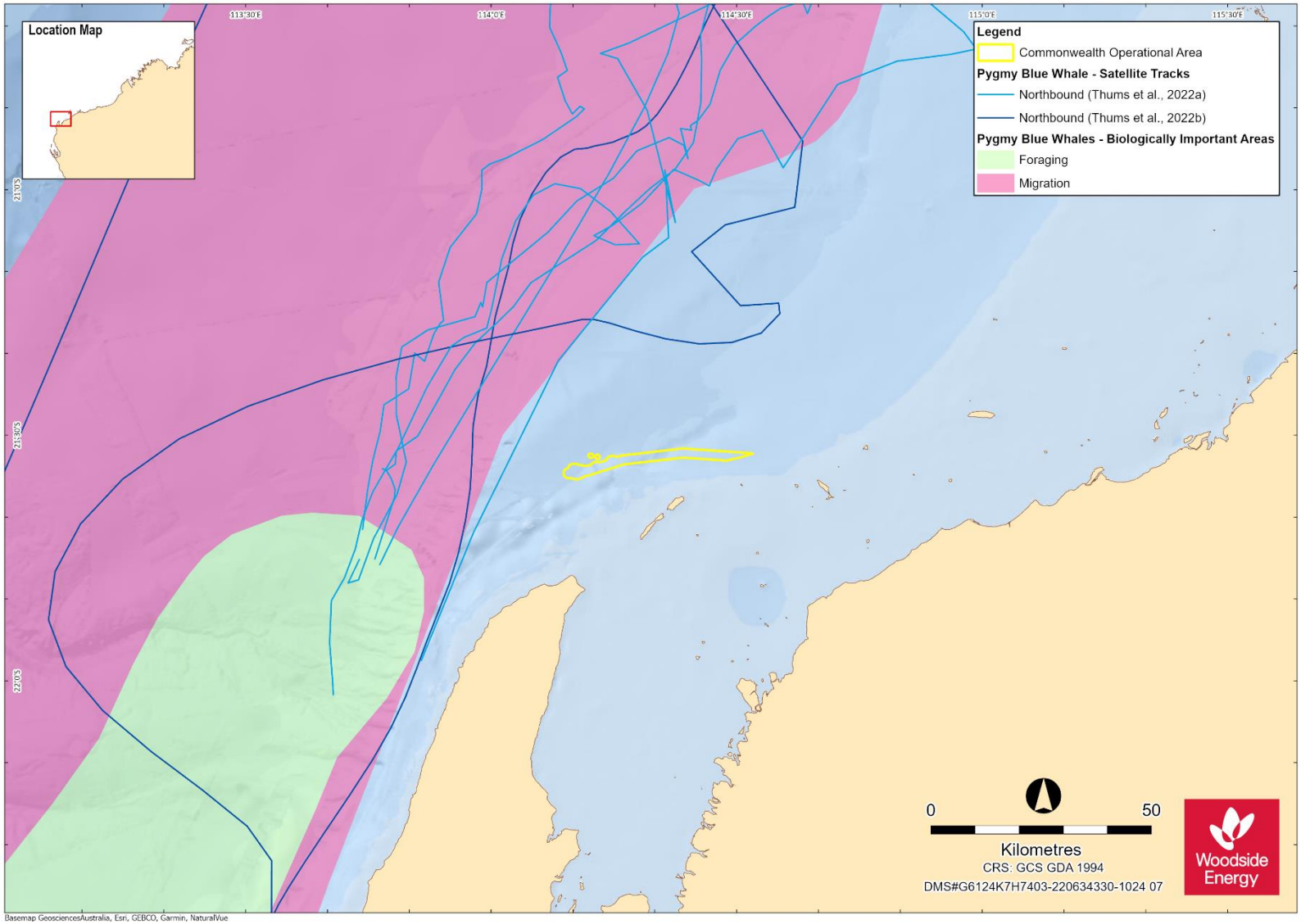

Figure 4-7 Pygmy blue whale BIAs and satellite tracks (Double et al., 2012, 2014)

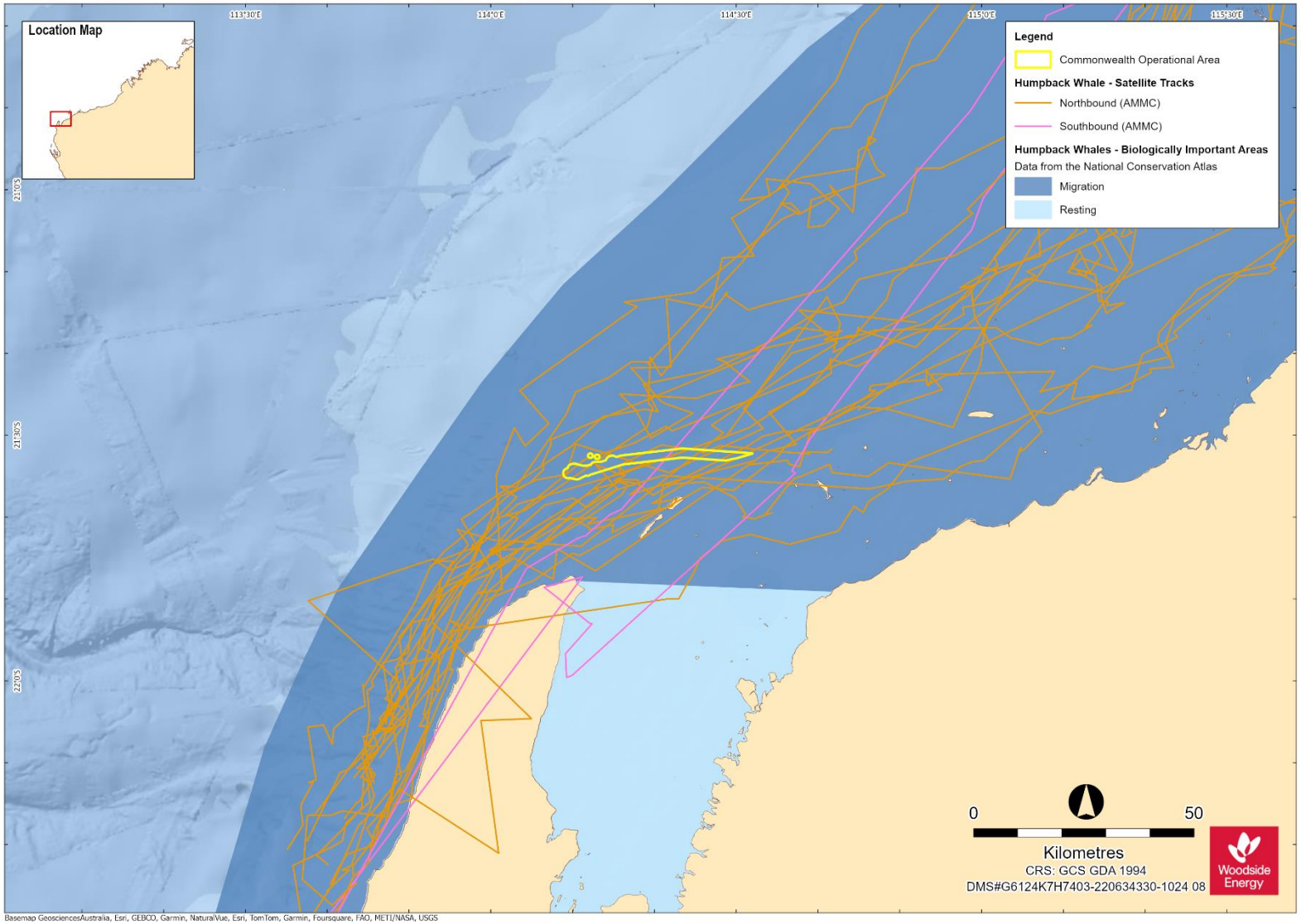

Figure 4-8 Humpback Whale BIAs and satellite tracks (Double et al., 2012, 2010)

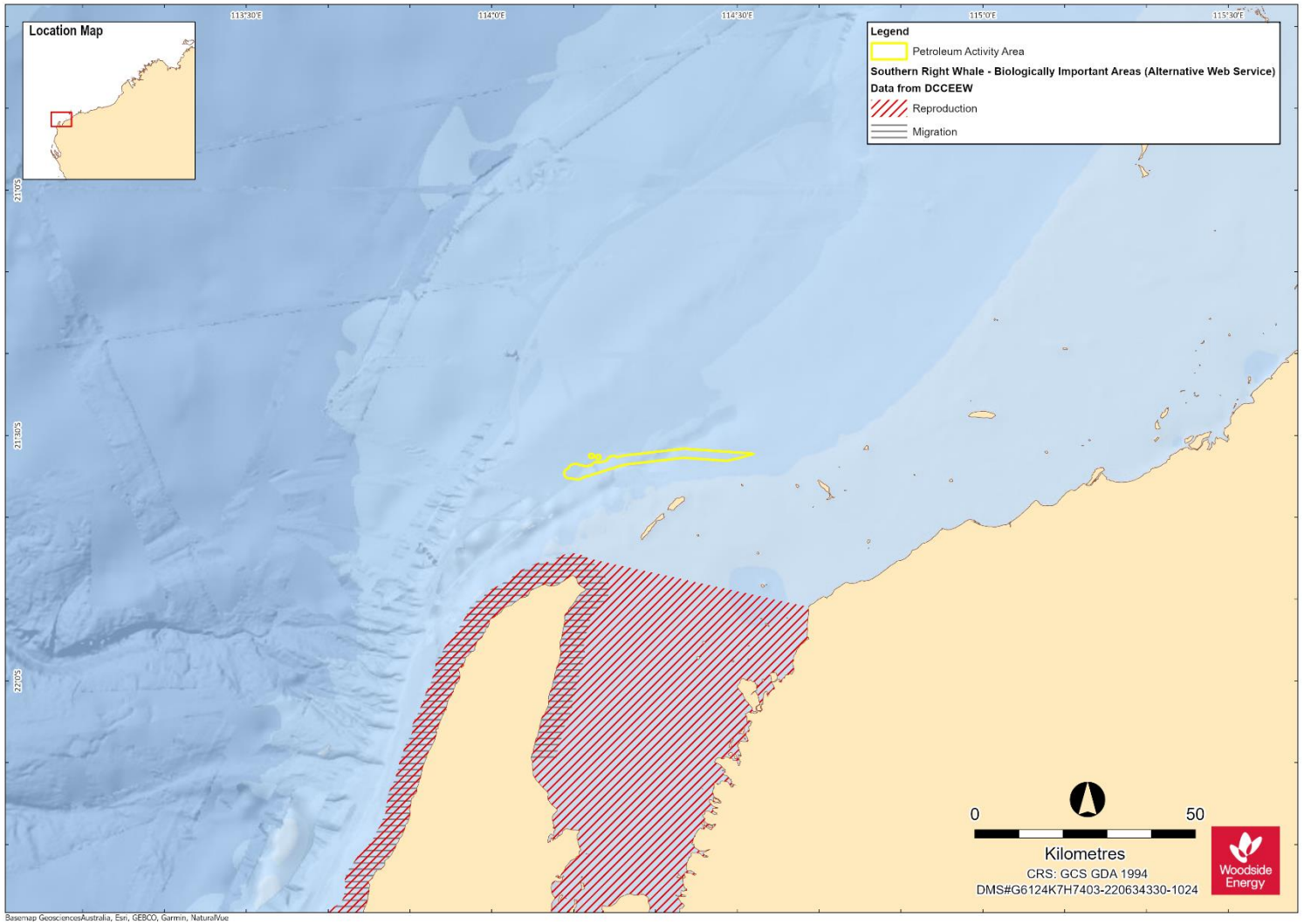

Figure 4-9: Southern Right Whale BIAs overlapping the EMBA

(figure note: habitat critical to the survival of the species listed in Table 4-11 aligns with the reproduction BIA shown in Figure 4-9)

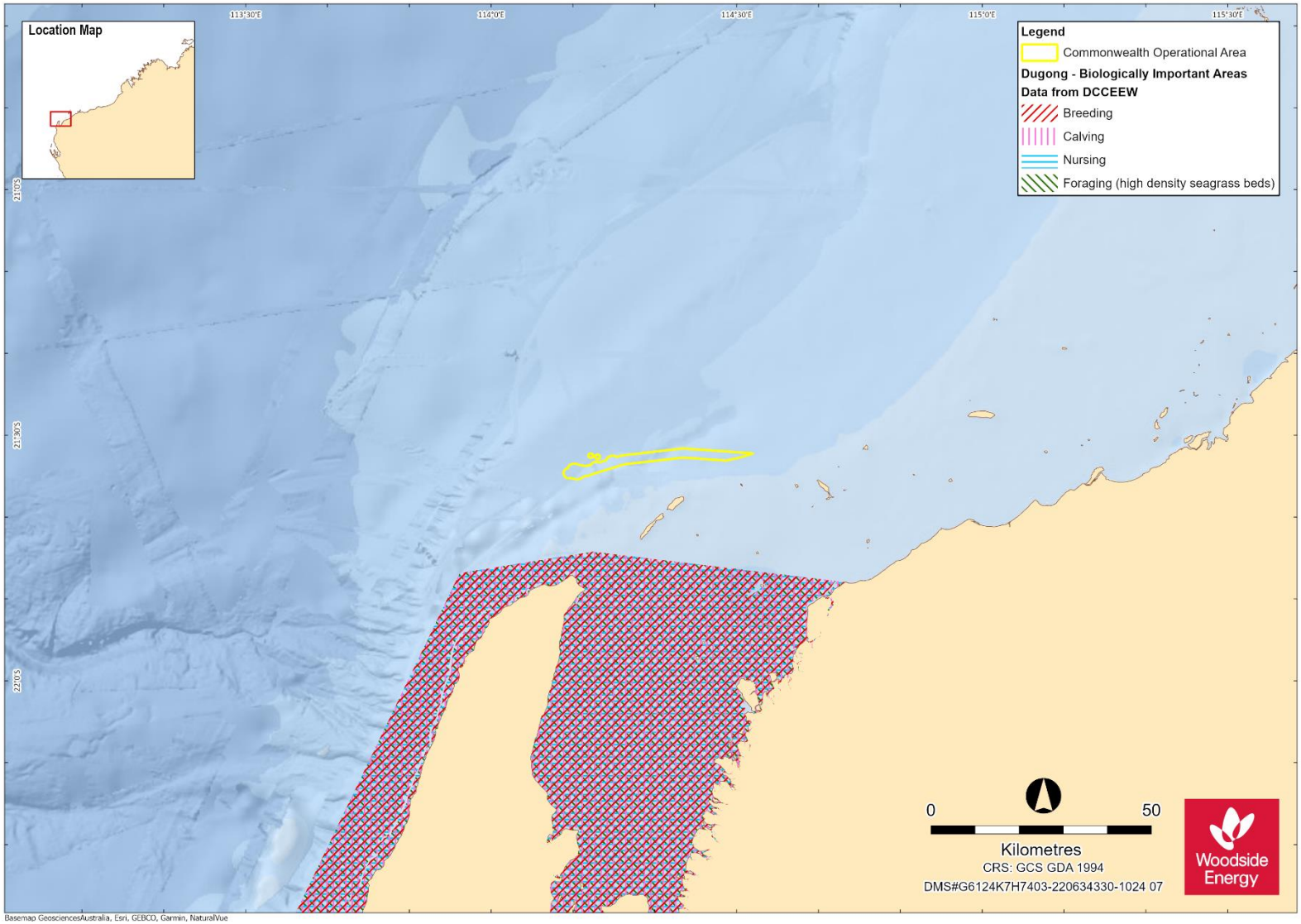

Figure 4-10: Dugong BIAs overlapping the EMBA

4.6.4 Seabirds and Migratory Shorebirds

A total of 47 EPBC listed marine or coastal bird species have been identified to potentially occur within the Operational Area or EMBA. 16 of these species are listed under the EPBA Act as 'threatened' and an additional 23 are listed as 'migratory'. There are 8 species shown in the PMST results that have not been included within Table 4-12, these include a variety of bird species that do not have a threatened or migratory listed status under the EPBC Act.

The Wedge-tailed Shearwater breeding BIA overlaps with the Operational Area while breeding BIAs for the the Fairy Tern, Wedge-tailed Shearwater, Lesser Crested Tern and Roseate Tern overlap the EMBA as shown in Figure 4-11 and described in Table 4-13.

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	Species or species habitat may occur within area.	Species or species habitat may occur within area.
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	Foraging or feeding likely to occur within area.	Breeding known to occur within area.
Falco hypoleucos	Grey falcon	Vulnerable	N/A	N/A	Species or species habitat likely to occur within area.
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	N/A	Species or species habitat known to occur within area.
Malurus leucopterus edouardi	White-winged fairy-wren	Vulnerable	N/A	N/A	Species or species habitat likely to occur within area.
Thalassarche impavida	Campbell albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area.
Pterodroma mollis	Soft-plumage petrel	Vulnerable	N/A	N/A	Foraging, feeding or related behaviour likely to occur within area.
Calidris canutus	Red knot	Vulnerable	Migratory	Species or species habitat may occur within area.	Species or species habitat known to occur within area.
Macronectes giganteus	Southern-giant petrel	Endangered	Migratory	Species or species habitat may occur within area.	Species or species habitat may occur within area.
Phaethon lepturus fulvus	Christmas Island white-tailed tropicbird	Endangered	N/A	Species or species habitat may occur within area	Species or species habitat may occur within area.
Rostratula australis	Australian painted snipe	Endangered	N/A	N/A	Species or species habitat likely to occur within area.
Erythrotriorchis radiatus	Red goshawk	Endangered	N/A	N/A	Species or species habitat may occur within area.
Pezoporus occidentalis	Night parrot	Endangered	N/A	N/A	Species or species habitat may occur within area.

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Numenius madagascariensis	Eastern curlew	Critically Endangered	Migratory	Species or species habitat may occur within area.	Species or species habitat known to occur within area.
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	Species or species habitat may occur within area.	Species or species habitat known to occur within area.
Limosa lapponica menzbieri	Northern Siberian bar-tailed godwit	Endangered	N/A	N/A	Species or species habitat known to occur within area.
Anous stolidus	Common noddy	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat likely to occur within area.
Fregata ariel	Lesser frigatebird	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat known to occur within area.
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area.
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat likely to occur within area.
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Species or species habitat known occur within area.	Species or species habitat known to occur within area.
Calidris melanotos	Pectoral Sandpiper	N/A	Migratory	Species or species habitat may occur within area.	Species or species habitat may occur within area.
Calidris acuminata	Sharp-tailed Sandpiper	Vulnerable	Migratory	Species or species habitat may occur within area.	Species or species habitat known to occur within area.
Limnodromus semipalmatus	Asian dowitcher	Vulnerable	Migratory	N/A	Species or species habitat may occur within area.
Hirundo rustica	Barn swallow	N/A	Migratory	N/A	Species or species habitat may occur within area.

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	N/A	Species or species habitat known to occur within area.
Hydroprogne caspia	Caspian tern	N/A	Migratory	N/A	Species or species habitat known to occur within area.
Tringa nebularia	Common greenshank	Endangered	Migratory	N/A	Species or species habitat likely to occur within area.
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat known to occur within area.
Apus pacificus	Fork-tailed swift	N/A	Migratory	N/A	Species or species habitat likely to occur within area.
Thalasseus bergii	Greater crested tern	N/A	Migratory	N/A	Breeding known to occur within area.
Motacilla cinerea	Grey wagtail	N/A	Migratory	N/A	Species or species habitat may occur within area.
Sternula albifrons	Little tern	N/A	Migratory	N/A	Species or species habitat may occur within area.
Charadrius veredus	Oriental plover	N/A	Migratory	N/A	Species or species habitat may occur within area.
Glareola maldivarum	Oriental pratincole	N/A	Migratory	N/A	Species or species habitat may occur within area.
Pandion haliaetus	Osprey	N/A	Migratory	N/A	Breeding known to occur within area.
Sterna dougallii	Roseate tern	N/A	Migratory	N/A	Breeding known to occur within area.
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	N/A	Breeding known to occur within area.

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	***EMBA***
Motacilla flava	Yellow wagtail	N/A	Migratory	N/A	Species or species habitat may occur within area.
Phaaethon rubricauda westralis	Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Triopicbird	Endangered	N/A	Species or species habitat may occur within area	Species of species habitat known to occur within area.

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

Species	BIA type	Approximate distance and direction from Operational Area (km)
Roseate Tern	Breeding: Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef	47.8 km south-west
Fairy Tern	Breeding: Pilbara and Gascoyne coasts and islands	26.9 km south-west
Wedge-tailed Shearwater	Breeding: Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef	Overlaps
Lesser Crested Tern	Breeding: Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef	21.9 km west

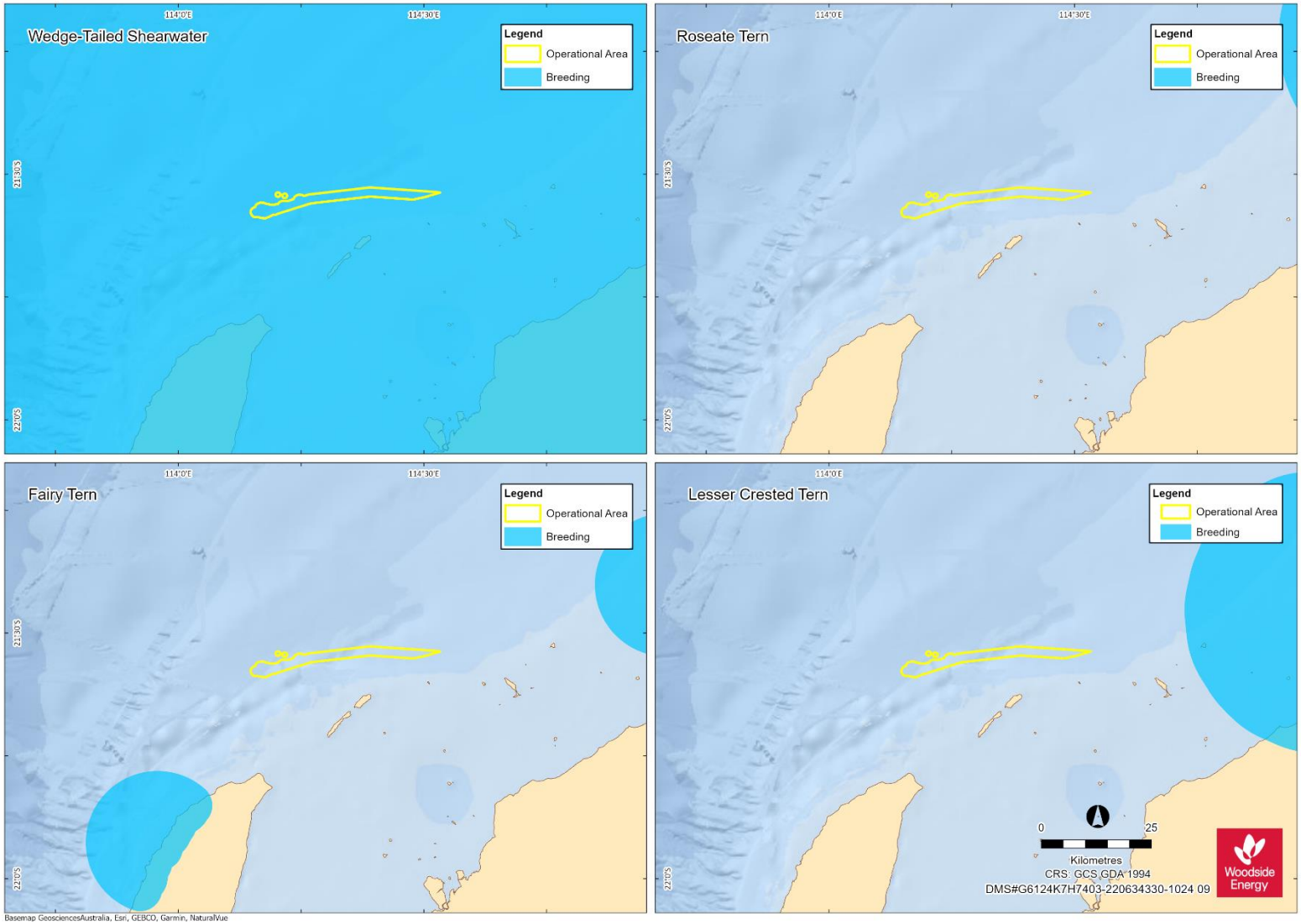

Figure 4-11: Seabirds BIAs overlapping and adjacent to the Operational Area

4.6.5 Seasonal Sensitivities for Protected Species

Seasonal sensitivities for EPBC Listed threatened and/or migratory species identified as potentially occurring within the Operational Area are identified in Table 4-14. Seasonal sensitivities linked to gazetted Biologically Important Areas that may be impacted by planned aspects of the activity, e.g. light and noise, are also identified. Movement patterns of all protected species identified in Section 4.6 are described in Appendix K Master Existing Environment**.**

Table 4-14: Key seasonal sensitivities for listed threatened migratory species identified.

Species	January	February	March	April	May	June	July	August	September	October	November	December
Fish, sharks and rays [1]												
Whale shark- foraging (northward from Ningaloo)												
Whale shark- foraging (high density prey, Ningaloo Reef)												
Great white shark – northern migration (to North West Cape) (DSEWPaC, 2013a)												
Marine reptiles [2]												
Flatback turtle, (F-Pil) – nesting												
Flatback turtle, Pilbara Coast genetic stock – hatching												
Green turtle, NWS Stock (G-NWS) – nesting												
Green turtle, NWS genetic stock – hatching												
Hawksbill turtle Western Australia Stock (H-WA) – nesting												
Hawksbill turtle Western Australia genetic (H-WA) stock – hatching												
Loggerhead turtle Western Australia Stock (LH-WA) – nesting												
Loggerhead turtle Western Australia stock (LH-WA) – hatching												
Mammals												
Fin whale (Aulich et al., 2022).												
Humpback whale – northern migration (range - DCCEEW, 2015; TSSC, 2015b; DSEWPaC, 2012a; peak - Salgado Kent et. al. 2012)												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Humpback whale – southern migration (TSSC, 2015b; Irvine & Salgado Kent, 2019; Salgado Kent et. al., 2012; DSEWPaC, 2012a)												
Sei whale – migration (DEH, 2005)												
Pygmy blue whale- northern migration (DCCEEW, 2015; DSEWPaC, 2012a; McCauley et. al., 2018; CoA, 2015a; peak - Thums et. al., 2022)												
Pygmy blue whale- southern migration (DCCEEW, 2015; DSEWPaC, 2012a citing (McCauley and Jenner, 2010; McCauley et. al., 2018; Thums et. al., 2022; CoA, 2015a). Peak November- December (Thums et. al., 2022)												
Southern right whale – migration (DCCEEW, 2024)												
Southern Right Whale (calving/presence) (DCCEEW, 2024)												
Seabirds and shorebirds												
Wedge-tailed shearwater – breeding/foraging (*fledgling emergence (first two weeks of April)				*								
Red knot – non-breeding season (NWMR) (TSSC, 2016a)												
Eastern curlew – non-breeding (NWMR) (DoE, 2015d)												
Curlew sandpiper – non-breeding season (NWMR) (DoE 2015)												
Southern giant petrel – non-breeding season (Australia) (DoE 2023)												
Indian yellow-nosed albatross – non-breeding season (Australia) (ACAP 2012)												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Campbell albatross – non-breeding season (Australia) (ACAP, 2012)												
	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, 2015). 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. Information regarding seasonal occurrence of marine turtles has been taken from the Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017).

4.7 Key Ecological Features (KEFs)

Two KEFs overlap the Operational Area and three additional KEFs are in the EMBA. KEFs within the Operational Area and EMBA are identified in Table 4-15 and described in Appendix K Master Existing Environment.

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

Key Ecological Feature	Approximate distance and direction from Operational Area (km)
Ancient Coastline at 125 m Depth Contour	Overlaps
Canyons Linking the Cuvier Abyssal Plain and the Cape Range Peninsula	Overlaps
Continental Slope Demersal Fish Communities	8 km west
Commonwealth waters adjacent to Ningaloo Reef	8.5 km south-west
Exmouth Plateau	91 km north-west

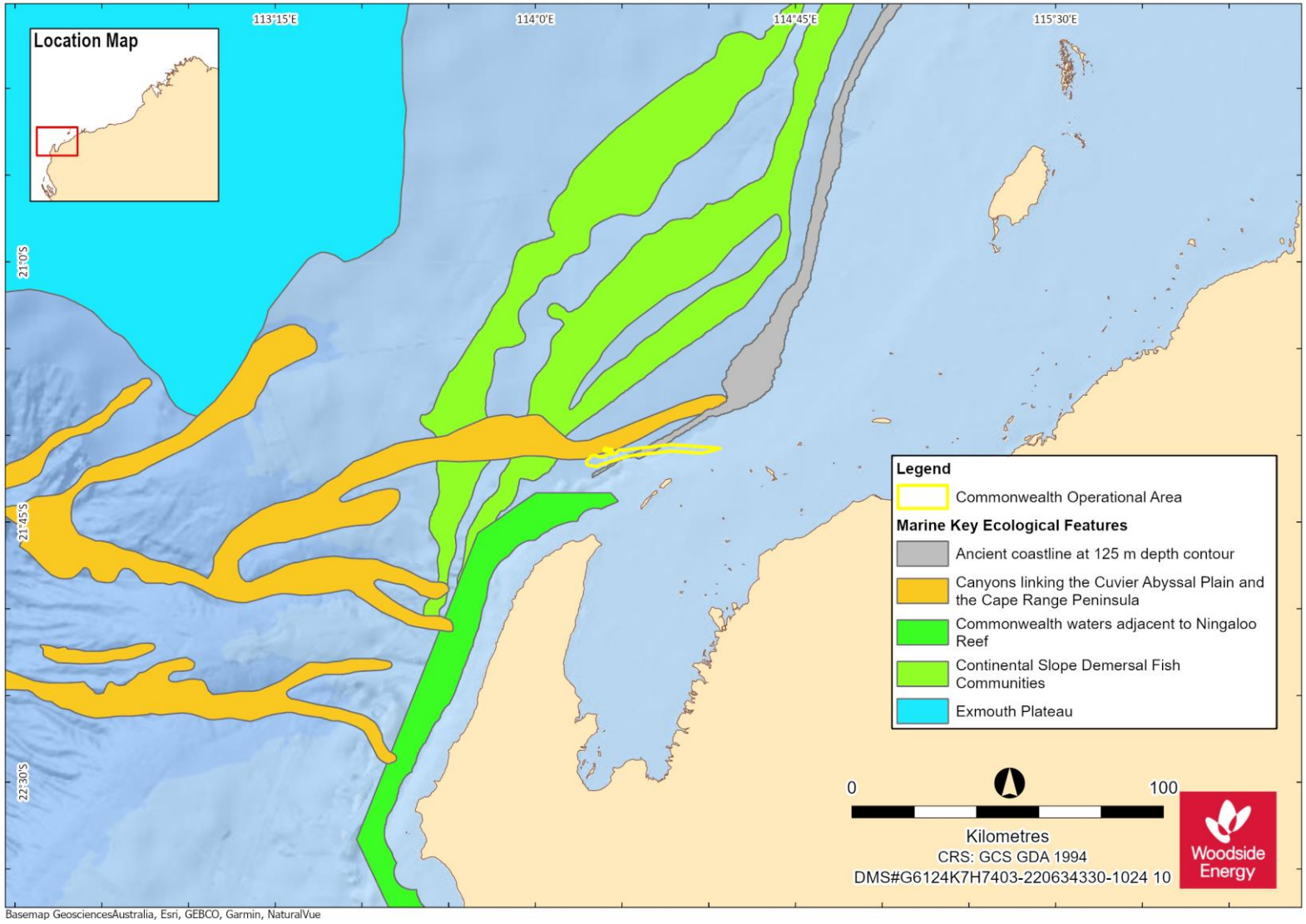

Figure 4-12: KEFs overlapping and adjacent to the Operational Area

4.8 Protected Places

No protected places overlap the Operational Area. Protected places within the EMBA are identified in Table 4-16 and presented in Figure 4-13.

Appendix K Master Existing Environment outlines the values and sensitivities of protected places and other sensitive areas in the EMBA.

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

	Approximate distance and direction from Operational Area to protected place or sensitive area (km)	Park zone and IUCN category[1] overlapping Operational Area and/or EMBA
AMPs		
Ningaloo Marine Park	8.4 km south-west	National Park Zone – II, Recreational Use Zone – IV
Gascoyne Marine Park	18 km west	Special Purpose Zone – VI, Recreational Use Zone – IV
Montebello Marine Park	108 km northwest	Special Purpose Zone – VI
State Marine Parks and Nature Reserves		
Marine Parks		
Ningaloo Marine Park	20.8 km southwest	Sanctuary Zone – IA, Recreational Use Zone – IV, Special Purpose Zone – VI
Barrow Island Marine Park	114.6 km northeast	Sanctuary Zone – IA
Marine Management Areas		
Muiron Islands Marine Management Area	3 km southwest	Special Purpose Zone – VI, Sanctuary Zone – IA
Barrow Island Marine Management Area	97 km northeast	Special Purpose Zone – VI
Nature Reserves		
Muiron Islands	8.7 km south	Sanctuary Zone – IA
Coastal Reserves		
Jurabi Coastal Park	24 km south	National Park Zone – II
Nationally Important Wetlands		
Cape Range Subterranean Waterways	22 km south	N/A

1. 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/Seascape

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, the IUCN categories for specific zones within each Marine Park as assigned under the North-west Marine Parks Network Management Plan 2018 and South-west Marine Parks Network Management Plan 2018.

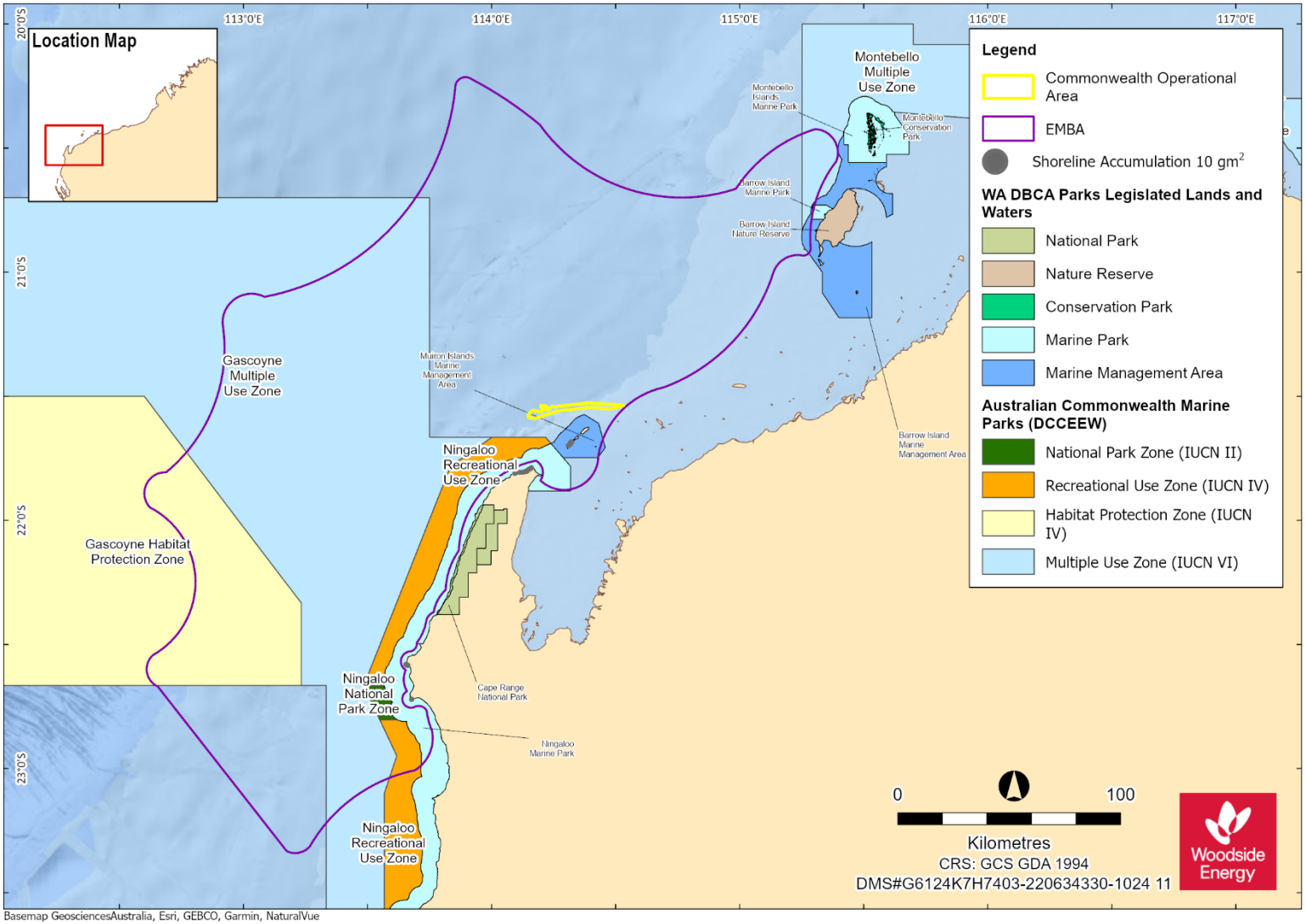

Figure 4-13: Protected areas adjacent to the Operational Area

4.9 Socio-Cultural Environment

4.9.1 Cultural Values and Heritage Features

4.9.1.1 Background

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

- the heritage values 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 the Operational Area and EMBA are described.

In line with The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013) (Burra Charter) and associated practice notes, Woodside understands heritage value to refer to the cultural significance of a place to an individual or group. A cultural feature, by contrast, is understood to be comparable to the Burra Charter term "fabric" and refer 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 (ICOMOS 2013).

Through consultation with relevant persons, Woodside recognises the deep spiritual and cultural connection to the environment[3] that First Nations people hold.

4.9.1.2 First Nations Peoples

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

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 (National 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

[3]Definition of 'Environment' in Regulation 4 of the OPPGS (Environment) Regulations are defined as:

a) ecosystems and their constituent parts, including people and communities; and
b) natural and physical resources; and
c) the qualities and characteristics of locations, places and areas; and
d) the heritage values of places; and includes
e) the social, economic and cultural features of the matters mentioned in paragraphs (a), (b), (c) and (d)

v Queensland (No 2) [1992] HCA 23; (1992) 175 CLR 1 ('Mabo'). Justice Toohey had the following to say (at 187):

it is inconceivable that indigenous inhabitants in occupation of land did not have a system by which land was utilized in a way determined by that society. There must, of course, be a society sufficiently organized to create and sustain rights and duties…

Therefore, Woodside understands that native title rights and interests are held communally by an organised society, that native title claims are understood to represent the area over which Indigenous groups are claiming these rights and interests, and that native title determinations provide clarity on where native title rights and interests are found to either exist or not exist. Where native title rights or interests are determined to exist they will be held by a Registered Native Title Body Corporate (section 57, Native Title Act 1993) in trust or as agent for native title holders.

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 (National 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.

For the activity in this EP, there is one coastal ILUA overlapping the EMBA, and six native title claims and ILUAs coastally adjacent to the EMBA (see Coastally Adjacent First Nations Groups

Woodside understands that Indigenous groups are keenly aware of the extent of their rights, interests and responsibilities for Country, and these are generally discrete, defined areas, including areas of sea (Smyth 2007). To identify cultural features and heritage values which may exist outside of native title claim, determination and ILUA areas, Woodside considers native title claims, determinations and ILUAs coastally adjacent to the EMBA to be an instructive means of identifying potentially relevant Indigenous groups to be consulted (See Appendix F).

That said, Woodside understands from engagement with relevant persons and/ or organisations, 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 Indigenous groups and individuals. This may also, over time, build expectations in the broader Indigenous community that a group is responsible for maintaining environmental values in areas for which they do not hold traditional knowledge. Woodside also acknowledges that an Indigenous group's relative proximity to any Operational Areas or EMBA is not necessarily a meaningful indicator of the connection of Indigenous groups to the area, and providing advice over such areas can be culturally dangerous. As a result, caution must be used when conducting broader engagement.

A summary of native title claims, determinations and ILUAs overlapping or coastally adjacent to the EMBA is set out in Figure 4-14 and 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.

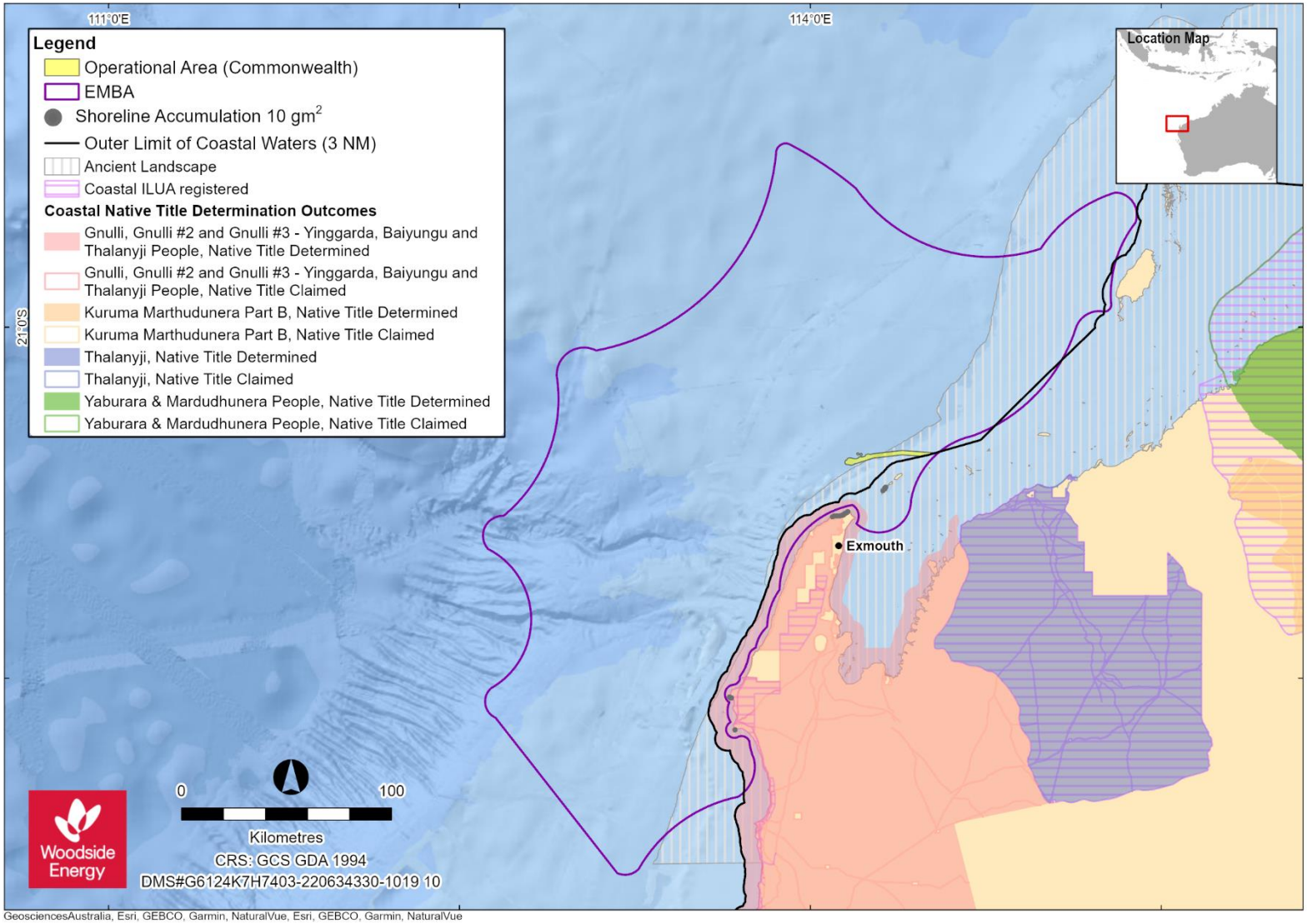

Figure 4-14 Operational Area and EMBAs in relation to native title claims, determinations and ILUAs

Table 4-17: Summary of Native Title Claim, Determinations and ILUAs which overlap or are coastally adjacent to the EMBA

Claim / Determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally Adjacent to the EMBA
Native Title Claim or Determination			
Gnulli, Gnulli #2 and Gnulli #3–- Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation (YAC)	No	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation (WAC)	No	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	No	Yes
ILUA			
KM & YM Indigenous Land Use Agreement 2018	WAC, Robe River Kuruma Aboriginal Corporation (RRKAC)	No	Yes
RTIO Kuruma Marthudunera People ILUA	RRKAC	No	Yes
Ningaloo Conservation Estate ILUA	NTGAC	Yes	No
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera ILUA	No representative body specified	No	No
Macedon ILUA	BTAC	No	Yes

4.9.1.3 Marine Parks

Woodside acknowledges that Commonwealth and State Marine Park Management Plans have sought to recognise cultural values 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' (Parks Australia, n.d.). AMP summarises these values as natural values, cultural values, heritage values and socio-economic values. Woodside is triggered to undertake an assessment of cultural values within Marine Park Management Plans where the operational area or EMBA overlaps an AMP. Woodside considers the management plans of AMPs that overlap the Operational Area and the EMBA to determine whether cultural features and heritage places have been identified and whether there are specified representative bodies referenced to contact regarding potential cultural features and heritage places.

The Operational Area does not overlap any AMPs. The EMBA overlaps with features of the Gascoyne, Montebello and Ningaloo AMPs managed under the North-West Marine Parks Network Management Plan 2018. The EMBA overlaps a further four State Marine Parks or Marine Management 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 (see Appendix F). Consultation with these groups may identify heritage values and cultural features beyond those addressed in the marine park management plans.

The North-West Marine Parks Network Management Plan 2018 notes for the Gascoyne, Montebello, and Ningaloo AMPs that the Yamatji Marlpa Aboriginal Corporation (YMAC) is the relevant Native Title Representative Body. The Ningaloo Marine Park and Muiron Islands Marine Management Area

Management Plan notes that at the time of preparing the plan a Native Title Claim over the North-West Cape area was on foot. The management plan refers to the Yamatji Barna Baba Maaja Aboriginal Corporation (now Yamatji Marlpa Aboriginal Corporation (YMAC)) as representing the claimants. YMAC has been consulted regarding this EP in their function as a Native Title Representative Body, as outlined in Appendix F in this EP. Consultation with YMAC included discussion of the Traditional Custodians who may hold knowledge of heritage values or cultural features (See Appendix F).

Table 4-18: Summary of Commonwealth and State Marine Park Management Plan EMBA overlap

Marine Park Management Plan	EMBA Traditional Custodian Group Overlap
Commonwealth Marine Park Management Plan	
Gascoyne AMP	Yes – however no Traditional Custodian group specified.
Montebello AMP	Yes – however no Traditional Custodian group specified.
Ningaloo AMP	Yes – however no Traditional Custodian group specified.
State Marine Park Management Plan	
Barrow Island Marine Park	Yes – however no Traditional Custodian group specified.
Barrow Island Marine Management Area	Yes – however no Traditional Custodian group specified.
Muiron Islands Marine Management Area	Yes – however no Traditional Custodian group specified.
Ningaloo Marine Park	Yes – however no Traditional Custodian group specified.

Sea country values noted in the AMP management plans are addressed in Section 4.9.1.4.

Management plans for the AMPs note shipwrecks within the AMPs and overlap with World, National and Commonwealth heritage lists. These are addressed in Sections 4.9.1.9 and 4.9.1.10 below.

Management of cultural features within marine ecosystems, including food sources, is discussed in Section 4.9.1.4.

The Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005 – 2015: Management Plan Number 52 (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.

A number of management plans for the state marine parks also note Indigenous and maritime heritage within the marine parks generally. These are addressed in Section 4.9.1.10 below.

4.9.1.4 Sea Country Values

‘Sea country’ can be defined as the area of sea over which an Indigenous group has interests, cultural value, connection and use. It has been noted that “the saltwater peoples of the north-west are associated with discrete clan estates or tribal areas, often referred to in contemporary Aboriginal English as ‘saltwater country’ or ‘sea country’. Country’ refers to more than just a geographical area: it is shorthand for all the values, places, resources, stories and cultural obligations associated with that geographical area.” (Smyth 2007). In the management plans for all three AMPs listed in

Section 4.9.1.3 it is noted that “Sea country is valued for Indigenous cultural identity, health and wellbeing” (DNP 2018). Cultural identity is understood to refer to the fact that “essence of being a ‘Saltwater’ person is ontological rather than merely technological. That is, 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). 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.

Woodside recognises the potential for marine ecosystems to include cultural features as well as environmental values. This is one aspect of the broader concept of “sea country”, which can be defined as the area of sea over which an Indigenous group has interests, cultural value, connection and use. It has been noted that “the saltwater peoples of the north-west are associated with discrete clan estates or tribal areas, often referred to in contemporary Aboriginal English as ‘saltwater country’ or ‘sea country’. ‘Country’ refers to more than just a geographical area: it is shorthand for all the values, places, resources, stories and cultural obligations associated with that geographical area.” (Smyth, 2007). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural values 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, 2023).

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). The process for identifying Indigenous groups who may have interests and connection in Sea Country are set out in Section 5. The scope of advice Traditional Custodians were encouraged to provide through project consultation was not limited by reference to any particular boundaries or limits of sea country.

Cultural features of coastal areas may include marine species that may travel many thousands of kilometres through areas with similar cultural values to multiple Indigenous language groups. Some species may travel as far as 5,000 km from Antarctica to the Kimberley region of Western Australia (Double et al., 2010, 2012a), passing Indigenous language groups along the entire west coast of Australia. Distribution and migratory patterns of migratory species are described in Section 4.6.

Sea country values have been defined using multiple lines of evidence including:

- Desktop assessment of sea country values from publicly available sources
- Indigenous archaeological heritage assessment
- Consultation with First Nations groups and individuals.

The processes for identifying First Nations groups who may have interests in and connections to Sea Country are set out in Sections 0 and Section 5.3.

4.9.1.5 Desktop Assessment of Sea Country Values

Cultural Features and Heritage Values identified in publicly available literature.

Publicly available sources were assessed for any records of previously identified Sea Country values or cultural features that may overlap with the Operational Area or EMBA. 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.

All cultural features and heritage values restricted to onshore locations or inland waters have been excluded in Table 4-20. Where the geographical extent of cultural features and heritage values is not specified or unclear, those features and values have been included in the table for completeness.

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. Value: traditional knowledge holds that ancestors live on the land and in the water. Therefore, people have obligations to access and care for these places (e.g., keeping them clean).	Peck on behalf of the Gnulli Native Title Claim Group v State of Western Australia [2019] FCA 2090	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Feature: heritage sites in the Ningaloo region include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources. Feature: resources including gajalbu (emu), bundgurdi (kangaroo), bardurra (bush turkey), majun (marine turtles), turtle eggs, bilygurumarda (osprey), fish, shellfish and plants. Feature: mudflats, mangroves and sand dunes provide a critical breeding ground for marine and terrestrial wildlife. Value: the Ningaloo region contains cultural heritage dating back at least 32,000 years, including ceremonial Thalu sites. Value: connection to Country is important to the Traditional owners' spirituality and religion. Value: caring for Country - "The southern coastal reserves along the Ningaloo Coast are jointly managed by Traditional Owners and the DBCA. The Joint Management Body ensures that the Traditional Owners have an opportunity to make decisions about environmental management and land use". This document also includes information that is marked that cannot be copied, reproduced or used without consent.	DBCA 2020	No Possible (turtles, fish) No (other resources) No No Possible (unspecified) No	Possible (Shoreline accumulation areas) Possible (turtles, turtle eggs, fish, shellfish) No (other resources) Possible (mangroves) Possible (unspecified, but likely refers to onshore areas) Possible (unspecified, but likely due to location of EMBA) Yes

	Feature: resources including mangrove crabs, gastropods, shellfish, dugong, turtle.	Morse 1993.	Possible (turtles, dugong) No (other resources from a cultural context)	Possible (all)
Thalanyji	Feature: resources including fish, shellfish, crabs, crustaceans, sea urchins, turtle, dugong and flora and fauna associated with mangrove communities. Feature: archaeological sites on Barrow Island. Value: connection to Country.	Commonwealth of Australia 2002.	Possible (fish, turtle, dugong, invertebrates) No Possible (unspecified)	Possible (fish, turtle, dugong, invertebrates) No (No shoreline contact with Barrow Island) Possible (unspecified)
	Feature: resources include turtles, eggs, fish, shellfish and plants.	DBCA et al. 2002.	Possible (fish, turtle)	Possible (fish, turtle, eggs, shellfish)
	Value: traditional knowledge recalls a water snake is located in inland waters.	Hayes on behalf of the Thalanyji People v State of Western Australia [2008] FCA 1487	No (inland waters)	No (inland waters)
	Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA 2022	Possible (unspecified) Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified) Possible (unspecified)
	Value: access to Barrow and possibly Montebello Islands	Hook et al. 2004.	No	No (No shoreline contact with Barrow Island or Montebello Islands)
	Feature: artefact scatters are located in coastal sand dunes. Feature: burials are located in coastal sand dunes. Value: traditional knowledge recalls a water snake is located in inland waters.	Hook 2020.	No No No	Possible (Shoreline accumulation areas) Possible (Shoreline accumulation areas) No
	Feature: archaeological sites are located on Barrow Island.	Ditchfield et al. 2018	No	No (No shoreline contact with Barrow Island)

		Paterson 2017		
	Feature: archaeological sites are located at Barrow and Montebello Islands. Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.	Dortch et al. 2019.	No No	Possible (No shoreline contact with Barrow Island or Montebello Islands) Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation)
	Feature: thalu ceremonial sites for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu. Feature: ceremonies. Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA 2022	No No Possible Possible Possible	No (ceremonial use) Possible (submerged thalu sites e.g., petroglyphs) No Possible Possible Possible
Unspecified	Feature: the ocean can include sacred sites and songlines. Value: people have kin relationships to important animals, plants tides and currents.	Smyth 2008	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Feature: archaeological sites in submerged landscapes.	Bradshaw 2021.	No	Possible
	Value: sea country has customary law defining ownership and management rights and responsibilities.	Muller 2008.	Possible (unspecified)	Possible (unspecified)
	Value: knowledge of Sea Country Value: connection to Sea Country Value: care for Sea Country Value: the extent of Sea Country is determined by the travels of dreaming ancestors. This is recorded and conveyed through songlines.	Kearney et al 2023.	Possible (unspecified) Possible (unspecified) Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified) Possible (unspecified) Possible (unspecified)
	Feature; archaeological sites indicate that islands were occupied prior to sea level rise.	DBCA 2020	No	Possible (submerged)
	Value: sea country includes values, places, resources, stories and cultural obligations. Value: activities relating to resources included: • Dugong hunting; • Turtle hunting;	Smyth 2007	Possible Possible (activities and fauna present)	Possible Possible (activities and fauna present)

	• Turtle egg collecting; • Seabird egg collecting; • Spearing fish; • Reef trapping fish; • Herding fish; • Line fishing; • Collecting fish in stone fish traps; • Poisoning fish; • Gathering shellfish and other marine resources.			
	Value: people have kinship relationships with every plant and animal. Value: certain species, including fish and seafood, must not be eaten during initiation rituals due to their sacredness to the creation being Barrimirndi. Breaking this law may lead to cyclones.	Juluwarlu 2004	Likely to occur No	Likely to occur No
	Feature: tangible and intangible heritage. Feature: archaeological evidence of varied occupation and adaptation. Value: a distinct way of life centred around the use of limited water and coastal resources.	Macfarlane and McConnell 2017	Possible (unspecified) No No	Possible (unspecified) Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation) Possible (unspecified)

4.9.1.6 Indigenous Archaeological Heritage Assessment

Woodside understands that communal cultural connection may exist between Traditional Custodians and land and waters. It is understood from the onshore archaeological record that First Nations people have occupied the Australian continent for at least 65,000 years (Clarkson et al 2017) and in many places maintain a strong continuing connection that is said to extend back in Indigenous cosmology to the beginning of time.

It is understood that the sea level has risen significantly during the 65,000 years of First Nations occupation, and areas that were once inhabited are now submerged on the continental shelf (Veth et al 2019; UWA 2021). The Ancient coastline KEF at 125 m depth contour represents the lowest sea level during Indigenous occupation (O'Leary et al., 2020; see also Williams et al., 2018; 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, 2023, Benjamin et al, 2020; see Ward et al 2022 for an opposing view).

In recognition of this, Woodside considers the Ancient Landscape between the mainland and the Ancient coastline KEF (see Figure 4-12) as an area where potential First Nations archaeological material may exist on the seabed, as this covers the full extent of this possible First Nations occupation. Known First Nations heritage places including archaeological sites may be protected under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, *Underwater Cultural Heritage Act 2018* or EPBC Act 1999. However, these Acts only extend protection to heritage places specified by declaration or otherwise included on a statutory list. Woodside understands that there is no Indigenous archaeology known to exist anywhere within Commonwealth waters and no declarations or prescriptions under these Acts are located within the EMBA.

The Operational Area overlaps the ancient landscape. A review will be undertaken by a suitably qualified marine archaeologist for activities that could create newly established seabed disturbance in areas where the water depth is less than 130 m. This approach is consistent with the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters (DCCEEW, 2024). Further information regarding this assessment process is outlined in Section 7.3 of this EP.

The Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry system was searched for the EMBA, which indicated two Registered or Lodged Aboriginal Sites (Appendix H). 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 Western Australian Department of Aboriginal Affairs (DAA) and relevant local Aboriginal communities.

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

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 8.2.3).

Where Indigenous archaeological material is identified within the EMBA, Woodside will discuss the management of this material with appropriate Traditional Custodian group(s), starting with any adjacent Native Title Body Corporate.

4.9.1.7 Consultation Feedback to Inform Existing Environment

Summary of values raised during consultation

A summary of the topics/interests and values raised by First Nations groups through consultations on the activities under this EP, general Scarborough Project activities, or other activities is provided in Table 4-20.

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, Registered Native Title Bodies Corporate and nominated representative corporations have identified or raised topics relating to environmental values of cultural interest. Woodside recognises the deep spiritual and cultural connection to the environment that First Nations people hold.[4]

The Program of Ongoing Engagement with Traditional Custodians (Appendix G) provides a mechanism for ongoing dialogue between Woodside and Traditional Custodians, beyond that required by regulation 25. The program enables Woodside to manage the potential impacts and risks to cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians. 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 8.2.3).

[4] Definition of 'Environment' in Regulation 4 of the OPPGS (Environment) Regulations are defined as:
a) ecosystems and their constituent parts, including people and communities; and
b) natural and physical resources; and
c) the qualities and characteristics of locations, places and areas; and
d) the heritage values of places; and includes
e) the social, economic and cultural features of the matters mentioned in paragraphs (a), (b), (c) and (d)

Table 4-20: Feedback Received via Consultation to Inform Existing Environment Description

Relevant Indigenous Group /Individuals	Consultation context	Description of Value	Potential for overlap	
			Operational Area	***EMBA***
BTAC representing some of the Gnulli native title claimants (Baiyungu and Thalanyji people)	Raised in context of other Woodside activities	Cultural obligation to care for the environmental values of Sea Country Sea Country extends "out to the vast islands off the coast of the Pilbara, including the Monte Bello Islands, Barrow Island, and the Mackerel Islands"	Possible (unspecified)	Possible (unspecified)
Nganhurra Thanardi Garrbu Aboriginal Corporation representing Baiyungu and Thalanyji people	Raised during consultation on this activity and other Woodside activities	Whales Whale sharks Marine parks	Likely to occur (whale) No No	Known to occur (whale) Known to occur Yes (Gascoyne AMP)
Robe River Kuruma Aboriginal Corporation (RRKAC)	Raised in context of other Woodside activities	Underwater heritage	Possible	Possible
Wirrawandi Aboriginal Corporation representing Ngarda-Ngarli (Mardudhunera and Yaburara)	Raised in context of other Woodside activities	Whales Turtles Underwater heritage Rock Art	Likely to occur Likely to occur Possible No	Known to occur Known to occur Possible No
Yamatji Marlpa Aboriginal Corporation (YMAC)	No values raised	-	-	-
Yinggarda Aboriginal Corporation representing Yinggarda People.	Raised during consultation on this activity and other Woodside activities	Whales Shark Bay Mullet Dugong Seagrass being food source for Dugong	Likely to occur No (coastal species) No No (refer to Table 4-4)	Known to occur No (coastal species) No No (refer to Table 4-4)

Further Information regarding Thalanyji Sea Country values

During consultation other Woodside Environment Plans, BTAC, on behalf of the Thalanyji People, advised it has a cultural obligation to care for the environmental values of Sea Country (refer to Appendix F , Table 1).

In correspondence from 20 February 2023 relating to the Scarborough Project, BTAC advised that:

- BTAC seeks support from Woodside to enable BTAC to define and articulate its values on Sea Country in a manner that could be more clearly understood by the offshore sector, government, and the community. This would enable BTAC and Woodside to collaborate to develop effective management plans that can provide adequate protection to Sea Country values; and
- BTAC seeks support from Woodside to obtain technical support to review the information and provide BTAC and its members with feedback on the project risks to Sea Country and help BTAC contemplate the potential management controls that could be developed to protects its values and interests

These requests do not constitute a request for ethnographic survey. Woodside has agreed to BTAC's request, and the resulting offer of technical support is detailed in Appendix F , Table 1. However, Woodside's offer for technical support is still being assessed by BTAC.

BTAC noted that this Sea Country extends "out to the vast islands off the coast of the Pilbara, including the Monte Bello Islands, Barrow Island, and the Mackerel Islands." In the absence of further advice from BTAC, Woodside understands from this description that BTAC's interests extend to the Montebello Marine Park Multiple Use Zone in the vicinity of the islands.

While an ethnographic survey has not been requested by BTAC, a review of publicly available literature has been undertaken to seek clarity on the extent of Sea Country for Thalanyji people. This review identified a number of heritage research projects undertaken for the Montebello and Barrow Islands which acknowledge the support of BTAC (e.g., Manne and Veth 2015, Veth et al. 2017), though no information regarding Sea Country values, or the extent of Sea Country, were identified.

Publicly available heritage assessment reports elsewhere on Thalanyji Country tend to rely on established native title boundaries (e.g., Chisholm 2013) or draw on historic maps, particularly those compiled by Norman Tindale and published in 1947 (e.g., Hook et al. 2020).

An early 1940's map by Tindale shows "Ťalaindji" (Thalanyji) Country as exclusively terrestrial and further west than areas typically recognised today as Thalanyji Country (Tindale 1940). This map also shows the Noala people as custodians of the Onslow area and defines Barrow and the Montebello Islands as "Mardudunera" (Mardudhunera) Country—it is unclear from the map if the boundary of Mardudhunera is proposed to represent an extent of Sea Country, or merely note that these islands are part of Mardudhunera Country.

A further refined version of this map was produced in 1974 which shows "Talandji" in a location more closely aligned with contemporary understanding of Thalanyji Country and removes the apparent extent of Mardudhunera over Barrow and the Montebello Islands (Tindale 1947). This definition of Thalanyji Country is still confined to the mainland in this map.

A more contemporary attempt at mapping traditional country is shown in The AIATSIS Map of Indigenous Australia (Horton 1996). This map similarly confines Thalanyji Country to terrestrial areas west of Onslow and leaves Barrow and the Montebello Islands unmarked as an area with "No published information available". It is also noted that "This map is based on data collected up to 1994 and is not intended to show precise areas or boundaries" (Horton 1996).

Collective assessments of Sea Country in the Pilbara (Lincoln and Hedge 2019, YMAC et al. 2010) were also found to rely on existing native title boundaries. It is noted in the Pilbara Sea Country Plan (YMAC et al. 2010) that:

> *Although some differences remain, between and among native title groups, there is now a general sense that most groups have coalesced into final forms that will, in future, be the groups that exercise rights and interests in their respective areas. many of these rights and interests will relate directly to native title. however, there is also a more broadly based appreciation of the need to accept and discharge responsibilities for land and marine management within native title areas regardless of whether native title per se is affected.* (YMAC et al. 2010, emphasis added).

The office of the Registrar of Indigenous Corporations records four corporations using the name Thalanyji:

- Buurabalayji Thalanyji Aboriginal Corporation
- Buurabalayji Thalanyji Aboriginal Corporation RNTBC
- Onslow Thalanyji Aboriginal Corporation
- Wurrumalu Thalanyji Aboriginal Corporation

The only currently operative organisation, and the only organisation with an identified website, is Buurabalayji Thalanyji Aboriginal Corporation RNTBC. This website states that "Thalanyji Country spreads out across the Ashburton River coastal plain south to Tubridji Point, then across to Yannarie River and upstream to Emu Creek, across the range hills of southwest Pilbara to Henry River and Cane River in the north." (BTAC 2021) This description includes coastal areas but provides no description of the extent of Sea Country.

A search of the National Native Title Tribunal register of applications and determinations identified four historic Native Title claims with the name Thalanyji:

- Thalanyji People (WC1995/002)
- Thalanyji People #2 (WC1996/082)
- Thalanyji (WC1999/045)
- Thalanyji 2 (WC2010/004)

Most of these claims were dismissed, and Woodside makes no assessment of the merits of these claims.

The area of WC1995/002, as defined in the map forming Attachment 1 to the Native Title Application, does not include any areas of Sea Country.

WC1996/082 does not include a publicly available map on the National Native Title Tribunal website. The Native Title Application does describe the area covered by the claim, including "This country extends from the Tubridji Point on the coast south west of Onslow and tracking south to Yanarrie River." and "The area also includes the waters and associated islands between Tubridji point and Cane River. These islands were visited by Thalanyji People." The extent of this Sea Country from the coast is unclear, but would presumably include islands as distant as Airlie Island, approximately 30 km from the shore.

The area of WC1999/045, as defined in the map forming Attachment C to the Native Title Application, includes an aera of water extending approximately 30 km from the mainland coast in encompassing a number of islands, including:

- Airlie Island
- Ashburton Island
- Bessieres Island
- Direction Island

- Flat Island
- Locker Island
- Round Island
- Serrurier Island
- Table Island
- Thevenard Island
- Tortoise Island, and
- the Twin Islands

The area also includes the south-most of the Mangrove Islands, but does not include the other Mangrove Islands.

The area of WC2010/004, as defined in the map forming Attachment C to the Native Title Application includes localised areas of sea up to approximately 5 km beyond the coast.

Woodside has developed a robust understanding of Thalanyji Sea Country cultural values and heritage features through publicly available information (Section 4.9.1.5) and consultation with BTAC under regulation 25. Woodside considers that it has taken all reasonable and practicable steps to identify cultural features and heritage values of Thalanyji people in the EMBA.

If further guidance from BTAC is received as part of ongoing consultation which changes Woodside's understanding of the extent of Thalanyji Sea Country, Woodside's Management of Change process (Section 8.2.3) will be applied to manage potential impact to newly identified cultural values or features to ALARP and Acceptable levels. This estimation does not limit the extent of consultation with BTAC or the features and values they are encouraged to identify and communicate.

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. Sections 4.9.1.5 and 4.9.1.7 confirm whether there is any potential for these to exist within the Operational Area or EMBA. As previously described, topics which have been raised in the context of an interest linked to the natural environment are impact and risk assessed in Section 6.6 and 6.7.

As cultural features are physical elements of a place, these can generally be assessed for impacts; where a feature is avoided, it is not impacted. Heritage values relate less to what is significant and more to why something is significant; interaction between heritage values and the Operational Area can only be reliably informed by consultation with Traditional Custodians where they are willing to share the necessary knowledge. Assessment of heritage values beyond cultural features alone is addressed in Section 7.3 subject to these caveats.

Further context: Archaeological heritage

Assessment of the Operational Area has not identified archaeological sites. Consultation with Traditional Custodians has not identified any First Nations cultural features or heritage values specifically associated with the Operational Area.

No archaeological sites have been identified beyond terrestrial or intertidal areas, except for two sites at Murujuga in Cape Bruguieres channel and Flying Foam Passage (Benjamin et al. 2020; Benjamin et al 2023), which are outside of the EMBA. However, it is recognised that there is the potential for submerged archaeological sites on the Ancient Landscape which is overlapped by the EMBA.

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 values that exist in addition to their archaeological or scientific value and are assessed separately.

Publicly available literature also noted traditional knowledge for underwater waterholes (Kearney et al 2023). In addition to the non-archaeological values of these features, water sources on the ancient landscape may have been focuses for human occupation and thus be more prospective for human occupation (Veth 2019).

Further context: Intangible cultural heritage

Intangible cultural heritage has been identified through literature review as culturally important to First Nations people (Section 4.9.1.5). Cultural knowledge, as expressed through songlines, dreaming, dance and other cultural practices, can be associated with tangible objects and physical sites that are culturally important to First Nations people (Ardler 2021; Bursill et al. 2007). Intangible cultural heritage can also be embodied in the practices, representations, expressions, knowledge, uses and skills associated with physical sites (UNESCO 2003). As a result, physical features may have intangible dimensions (ICOMOS 2013).

In terms of identified cultural features and heritage values related to intangible values summarised in Table 4-19, see below some additional context:

- 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). The routes of any songlines in the EMBA have not been provided by Traditional Custodians through consultation.

- Creation/dreaming sites, sacred sites and ancestral beings: The only sources located by Woodside with detailed descriptions of the location ancestral beings or creation/ dreaming/ sacred sites placed 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 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: Is necessary for the continuation of other values including caring for Country 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 below. 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. 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.

Further context: Marine ecosystems and species

First Nations people have raised through consultation that they have a general interest in environmental management and ecosystem health (i.e., natural environment interest), where a group/individual was seeking further information about potential impacts and risks from the Petroleum Activities Program on marine species and benthic communities in the Operational Area and EMBA. This includes marine mammals, marine reptiles, fish, seabirds, plankton, benthic habitats and marine parks, which are described in context of their distribution and populations in Section 4.6, with further details in Appendix K Master Existing Environment.

In terms of identified cultural features and heritage values related to marine ecosystems and species, see below some additional context:

- Marine mammals: Whales and dugongs have been identified through consultation with First Nations people as culturally important species. Details pertaining to whales, dugongs and dolphins, their distribution, migration patterns and populations are described in Section 4.6, with further details in Appendix K Master Existing Environment.
- Marine reptiles: Turtles and sea snakes have been identified through consultation with First Nations people as culturally important species, with turtles identified as a 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. No marine reptile related songlines have been identified that have the potential to interact with the Operational Area or EMBA. 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). Details pertaining to marine reptiles, their distribution, and populations are described in Section 4.6, with further details in Appendix K Master Existing Environment.
- Fish: Fish have been 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. Thalu are places where these increase ceremonies are performed. Details pertaining to fish are described in Section 4.6, with further details in Appendix K Master Existing Environment.
- Seabirds: Seabirds, and in particular shags, have been identified through literature as a resource (seabird eggs; Smyth 2007). Details pertaining to seabirds and migratory shorebirds are described in Section 4.6, with further details in Appendix K Master Existing Environment.

4.9.1.8 Historic Sites of Significance

There are no known sites of historic heritage significance within the Operational Area. Appendix K Master Existing Environment describes cultural heritage sites within the EMBA.

4.9.1.9 Historic Underwater Heritage

A search of the Australasian Underwater Cultural Heritage Database which records all known Maritime Cultural Heritage (shipwrecks, aircraft, relics and other underwater cultural heritage) in Australian waters indicated that there are no sites within the Operational Area, however, numerous shipwrecks exist within the EMBA. Table 4-21 lists shipwrecks within 50 km of the Operational Area. As noted in Section 6.6.2, prior to any planned seabed disturbance taking place, a desktop assessment of the potential for First Nations and non-First Nations Underwater Cultural Heritage will be completed.

Table 4-21: Recorded shipwrecks within the EMBA

Vessel name (ID number)	Year wrecked	Latitude	Longitude
Airlie (3629)	1876	-21.666667	114.866667
Cossack (3906)	1889	-21.666667	114.866667
Rose (4732)	1890	-21.583333	114.833333
Veronica (5061)	1928	-21.683333	114.383333
Fairy Queen (4088)	1875	-21.817150	114.189117
Nellie (4567)	1893	-21.750000	114.083333
Kapala (4318)	1964	-21.750000	114.083333
Ellen (4021)	1893	-21.750000	114.083333
Wild Wave (5112)	1875	-21.750000	114.083333
Sea Queen (4788)	1893	-21.750000	114.083333
Ruby (4749)	1893	-21.750000	114.083333
Lily of the Lake (4403)	1875	-21.750000	114.083333
Unidentified Lugger (5001)	1893	-21.750000	114.083333
Elizabeth (4013)	1893	-21.750000	114.083333
Bell (3736)	1893	-21.750000	114.083333
Agnes (3623)	1893	-21.750000	114.083333
Leave (4385)	1893	-21.750000	114.083333
Lamareaux (4369)	1893	-21.750000	114.083333
Mabel (4427)	1893	-21.750000	114.083333
Smuggler (4824)	1893	-21.750000	114.083333
Pearl (4628)	1896	-21.750000	114.083333
Olive (4598)	1893	-21.750000	114.083333
Florence (4111)	1893	-21.750000	114.083333

4.9.1.10 World, National and Commonwealth Heritage Listed Places

No listed heritage places overlap the Operational Area. World, National and Commonwealth heritage places within the EMBA are identified in Table 4-22. Appendix K Master Existing Environment, Section 10.2 and 10.3 outlines the values and sensitivities of these places.

Table 4-22: World Heritage Properties and National / Commonwealth Heritage Listed Places within the EMBA

Listed Place	Distance and direction from Operational Area to Listed Place (km)
World Heritage Properties	
Ningaloo Coast	3 km south
National Heritage Places	
Ningaloo Coast	3 km south
Commonwealth Heritage Places	
Ningaloo Marine Area – Commonwealth waters	9 km south-southwest

4.9.2 Commercial Fisheries

A number of Commonwealth and State fishery management areas are located within the Operational Area and EMBA. The Annual Fishery Status Reports published by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) were used to identify if Commonwealth managed fisheries have fished within the Operational Area and EMBA in the last five years. FishCube data were also requested from the WA Department of Primary Industries and Regional Development (DPIRD) for the most recently available five-year period of fishery catch and effort data (2018-–2022) 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 during this EP.

Table 4-23 provides an assessment of the potential interaction and Appendix K Master Existing Environment provides further detail on the fisheries that have been identified through desk-based assessment and consultation (Appendix F). Figures 4-15 to 4-17 show fisheries identified as having a potential interaction with the Petroleum Activities Program.

Table 4-23: Commonwealth and State managed commercial Fisheries overlapping the Operational Area and/or EMBA

Fishery	Potential for interaction		
	Operational Area	EMBA	Description
Commonwealth Managed Fisheries ✓ = potential for interaction, blue shading = overlap with Operational Area			
North West Slope Trawl Fishery	×	✓	The North West Slope Trawl Fishery management area overlaps the EMBA. Between one to six vessels have been active in the fishery since 2005. Fishery Status Reports indicate the maximum area fished between 2020-2021 occurred outside of the EMBA (ABARES, 2021). However, Woodside considers it a possibility that interactions with the fishery may occur in the combined EMBA.
Western Deepwater Trawl Fishery	×	✓	The Western Deepwater Trawl Fishery overlaps the Operational Area and EMBA. Fishery Status Reports indicate most recent activity overlapping the EMBA occurred in the 2020-2021 season (ABARES, 2021). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the combined EMBA.
Western Tuna and Billfish Fishery	×	×	The Western Tuna and Billfish Fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. However, in the last five years (2016 – 2021), fishing effort has concentrated south of Carnarvon (ABARE., 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Southern Bluefin Tuna Fishery	×	×	The Southern Bluefin Tuna Fishery spans the Australian Fishing Zone, however since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Western Skipjack Tuna Fishery	×	×	The Western Skipjack Tuna Fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The Fishery is not currently active, and no fishing has occurred since 2009 (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
State Managed Fisheries ✓ = potential for interaction, blue shading = spatial overlap for EMBA			

Fishery	Potential for interaction		
	Operational Area	EMBA	Description
Pilbara Line Fishery	✓	✓	The Pilbara Line Fishery licensees are permitted to operate anywhere within Pilbara waters (Newman et al., 2021), overlapping the Operational Area and EMBA. FishCube data for the Pilbara Line Fishery is not provided at the 10 NM scale, however catch effort reported over the last five years in the 60 NM CAES block 29114 which overlaps the Operational Area demonstrates it is active. 60 NM CAES blocks 29085, 29102, 29114 and 29125 overlapping the EMBA also demonstrate this fishery active status.
Pilbara Trap Fishery	✓	✓	The Pilbara Trap Fishery management area overlaps the Operational Area and the EMBA. The fishery is active in the EMBA, with 4 60 NM Catch and Effort System (CAES) block reporting up to 6 licences across the 2018 – 2022 seasons (DPIRD, 2022). FishCube data for the Pilbara Trap Fishery is not provided at the 10 NM scale, however effort reported in the 60 NM CAES block 21140 overlaps with the Operational Area. Therefore, Woodside considers it a possibility that interactions with the fishery may occur only in the EMBA.
Marine Aquarium Fish Managed Fishery	✓	✓	The Marine Aquarium Fish Managed Fishery management area overlaps the Operational Area and the EMBA, however generally collects fish for display in water depths of less than 30 m. The fishery is active in the EMBA, with 11 10 NM CAES block reporting active across the 2018 - 2022 seasons (DPIRD, 2022). FishCube data reported one active fisheries at 10 NM CAES block overlapping the Operational Area (DPIRD, 2022). Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
West Coast Deep Sea Crustacean Managed Fishery	×	✓	The West Coast Deep Sea Crustacean Managed Fishery is permitted to fish in waters deeper than the 150 m isobath. The FishCube data reported no active fisheries at 10 NM overlapping the Operational Area (DPIRD, 2022) Woodside considers there to be potential for interaction with this fishery and the Petroleum Activities Program within the EMBA.
Mackerel Managed Fishery (Areas 2 and 3).	Area 2: ✓	✓	Area 2 of the Mackerel Managed Fishery overlaps the Operational Area and EMBA, while Area 3 only overlaps the EMBA. FishCube data reported active fishing in ten 10NM CAES blocks between the 2018 – 2022seasons (DPIRD, 2022). FishCube data reported two fishing effort at 10 NM CAES blocks in 2021 overlapping the Operational Area (DPIRD, 2022). Woodside considers there to be potential for interaction with the fishery in the EMBA.
	Area 3: ×	✓	

Fishery	Potential for interaction		
	Operational Area	EMBA	Description
Gascoyne Demersal Scalefish Fishery	×	✓	The Gascoyne Demersal Scalefish Fishery management area overlaps the EMBA. FishCube data reported fishing effort at five 10 NM CAES blocks overlapping the EMBA (DPIRD, 2022). Woodside considers there to be potential for interaction with the fishery in the EMBA.
West Australian Sea Cucumber Fishery	×	✓	The West Australian Sea Cucumber Fishery management area overlaps the EMBA. The fishery is active in the EMBA with one 10NM CAES blocks overlapping the EMBA reported fishing activity in the 2018 and 2019 seasons (DPIRD, 2022). FishCube data reported no fishing effort at 10 NM CAES blocks overlapping the Operational Area (DPIRD, 2022). Woodside considers there to be potential for interaction with the fishery in the EMBA.
Pilbara Crab Managed Fishery	×	×	The Pilbara Crab Managed Fishery management area overlaps the Operational Area and the EMBA. However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2017 – 2022) (DPIRD, 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
West Coast Rock Lobster Fishery	×	×	The Western Rock Lobster Fishery management area overlaps the EMBA (DPIRD 2022). However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2017 – 2022) (DPIRD, 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
South West Coast Salmon Managed Fishery	×	×	The South West Coast Salmon Fishery management area overlaps the EMBA. However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2017 – 2022) (DPIRD, 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Pearl Oyster Managed Fishery	×	×	The Pearl Oyster Managed Fishery management area overlaps the EMBA. However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2017 – 2022) (DPIRD, 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Exmouth Gulf Prawn Managed Fishery	×	✓	The Exmouth Gulf Prawn Fishery management area overlaps the EMBA. The fishery is active in the EMBA with five 10NM CAES blocks overlapping the EMBA reported active fishing during 2018 - 2021 seasons (DPIRD, 2022). Woodside considers there to be potential for interaction with the fishery in the EMBA.

Fishery	Potential for interaction		
	Operational Area	**EMBA**	**Description**
Onslow Prawn Managed Fishery	×	✓	The Onslow Prawn Fishery management area overlaps the EMBA. FishCube data reported fishing effort at two 10 NM CAES blocks overlapping the EMBA (DPIRD, 2022). Block 204125 was active in 2022 and Block 212145 active in 2020. Woodside considers there to be potential for interaction with the fishery in the EMBA.
Specimen Shell Managed Fishery	✓	✓	The Specimen Shell Fishery management area overlaps the Operational Area and the EMBA. The fishery is active in the EMBA with six 10NM CAES blocks overlapping the EMBA. FishCube data reported fishing effort at 10 NM CAES blocks 213142 and 213143 during 2019 and 2021 fishing seasons the Operational Area (DPIRD, 2022). Woodside considers there to be potential for interaction with the fishery in the EMBA.
Charter based commercial operators ✓ = potential for interaction, blue shading = spatial overlap for EMBA			
Tour Operators	✓	✓	Fishing Tour Operators are permitted to operate across WA state waters and are required to report monthly logbook records of client fish catches. FishCube data reported four active tour operators at 10 NM CAES blocks overlapping the Operational Area (DPIRD, 2022). FishCube data indicate tour operator fishing effort highest around Ningaloo and Muiron Islands and at Barrow Island and the Montebello Islands, within the EMBA. Accordingly, Woodside considers it a possibility that interactions with tour operators will occur within the EMBA.

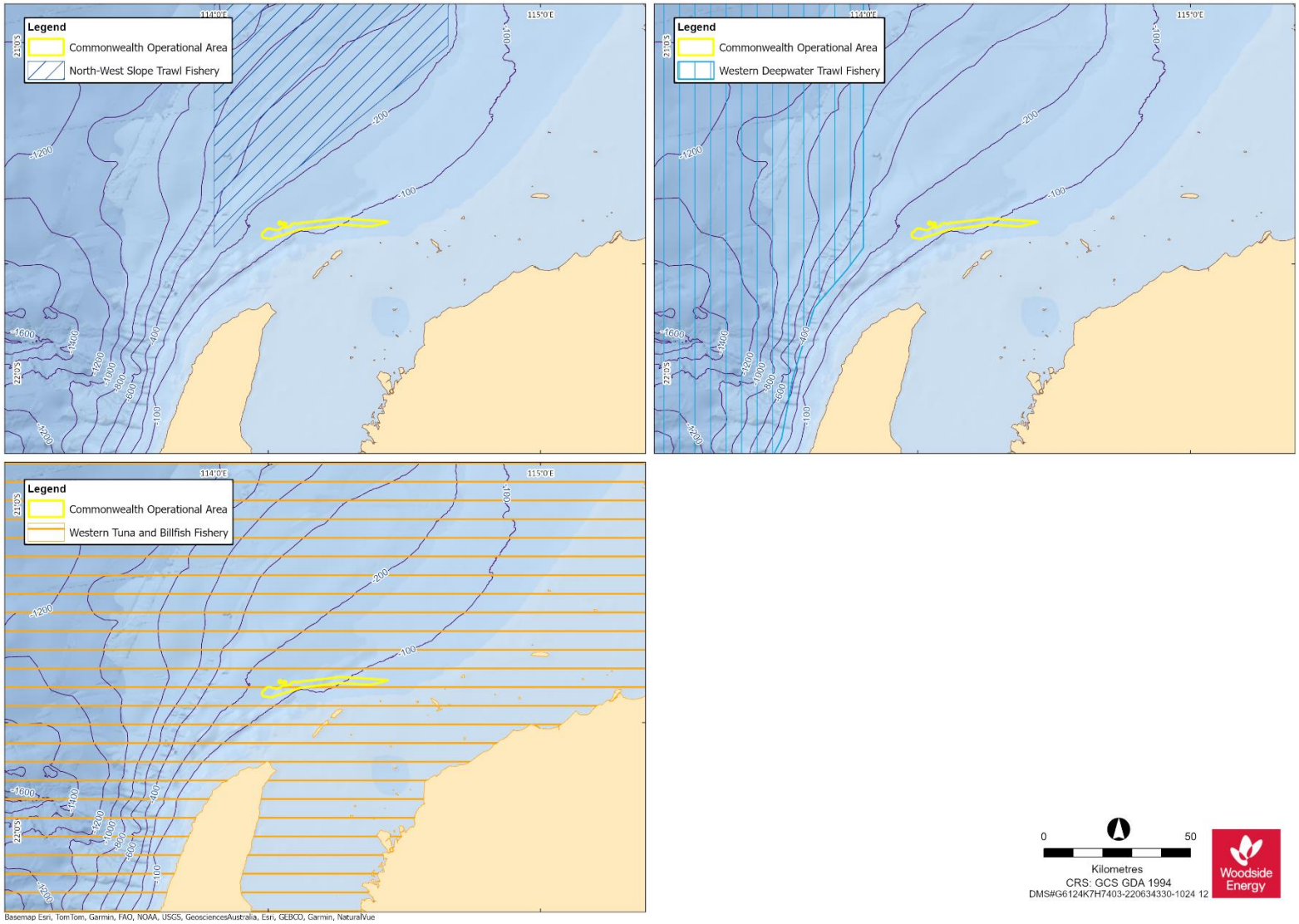

Figure 4-15: Commonwealth Managed commercial fisheries overlapping the Operational Area with a potential for interaction with Petroleum Activities Program

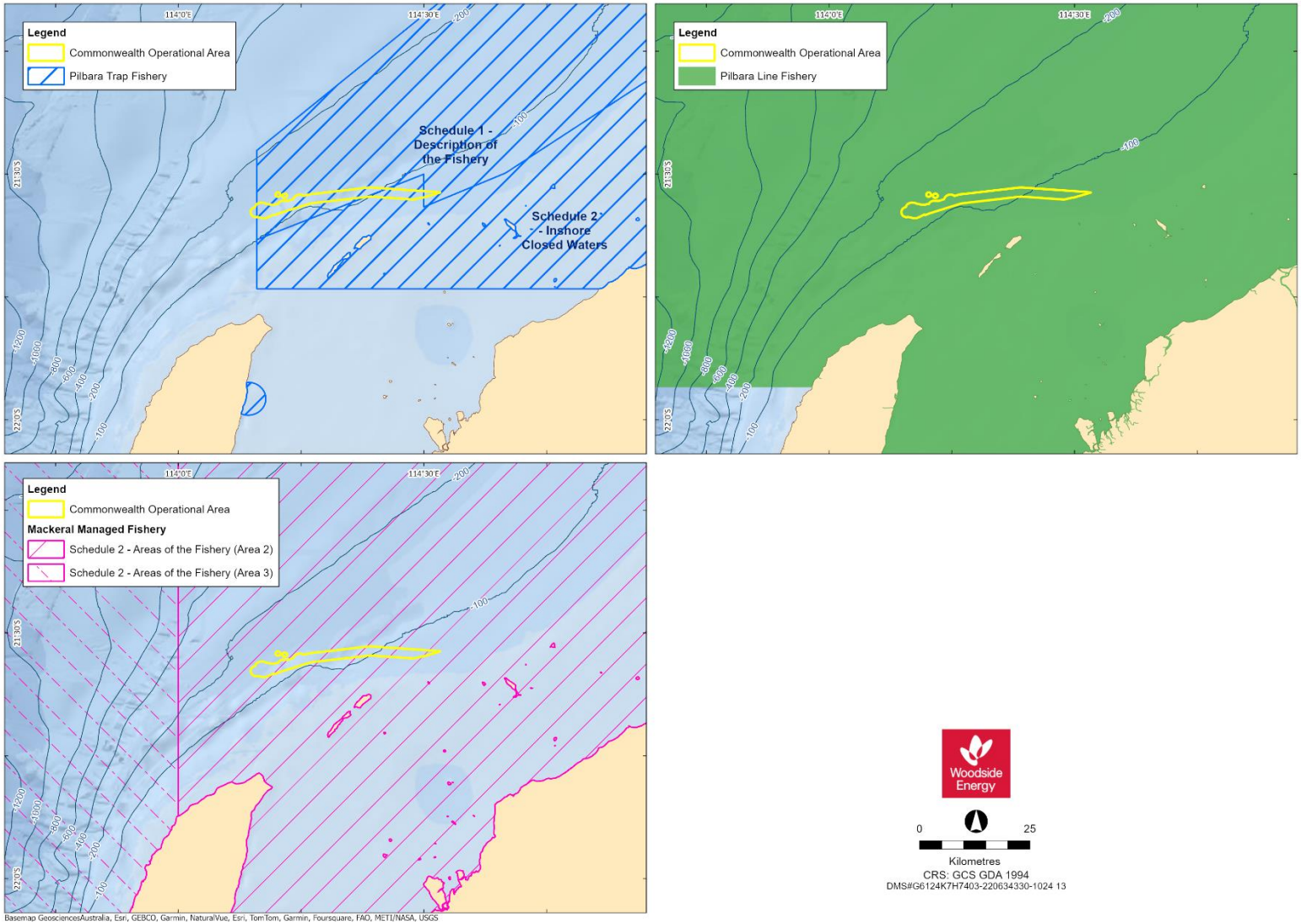

Figure 4-16: State Managed commercial fisheries overlapping the Operational Area with a potential for interaction with Petroleum Activities Program (1 of 2 figures)

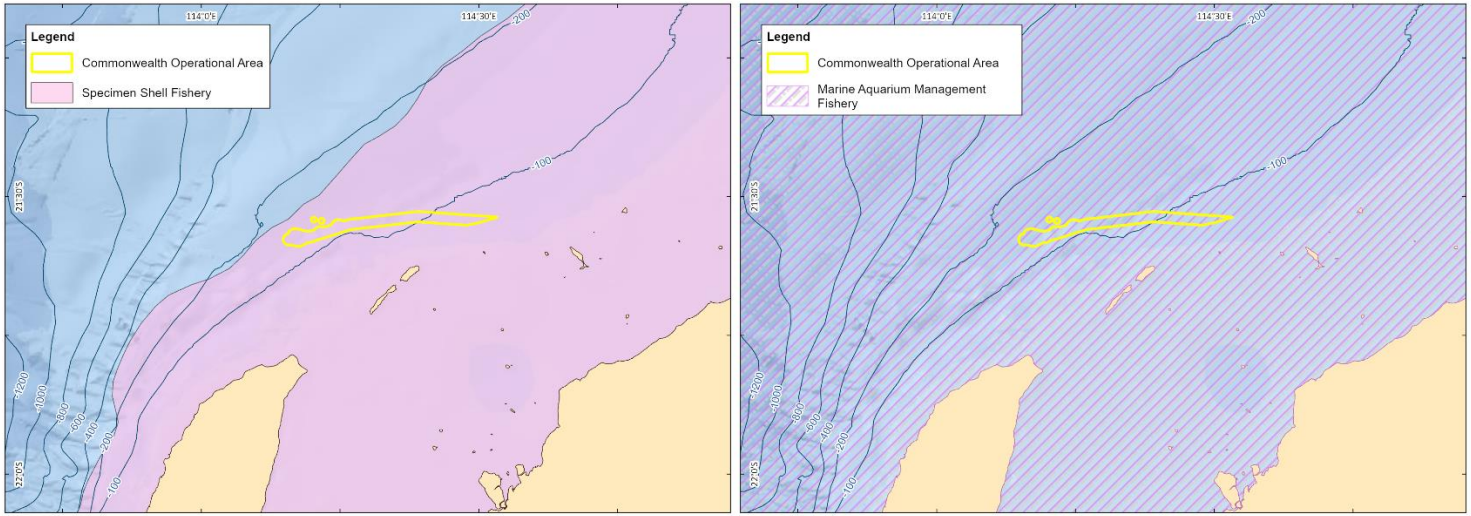

Figure 4-17: State Managed commercial fisheries overlapping the Operational Area with a potential for interaction with Petroleum Activities Program (2 of 2 figures)

4.9.3 Traditional Fisheries

Traditional or customary fisheries are typically restricted to shallow coastal waters and/or areas with structures such as reefs so are not likely to be in the Operational Area. However, it is recognised that Ningaloo Reef is within the wider EMBA and Barrow Island which lies less than 1 km outside of the wider EMBA, have a known history of fishing when areas were occupied (as from historical records) (CALM 2005).

4.9.4 Tourism and Recreation

The nearest population centres to the Operational Area are the towns of Onslow (~100 km) and Exmouth (~40 km). Onslow is a coastal town offering easy access to tourists, vacationers and recreational fishers to the Mackerel Islands, a group of ten islands 22 km offshore. Exmouth has become a significant tourist centre with Cape Range National Park, Ningaloo Marine Park and adjacent inshore waters.

Peak tourism occurs from April to October with marine-based activities concentrated around infrastructure such as boat ramps and camping areas (Smallwood, 2009). Marine facilities, including boat launching ramps, jetties, marinas, etc., within the area are limited, with most located along the Exmouth Gulf side of the peninsula including:

- Port of Onslow, Beadon Creek;
- Point Murat naval supply jetty (restricted access);
- Bundegi - facilities include a concrete launching ramp, car park and public toilets; and
- Exmouth Marina - provides launching, mooring, fuelling and supply facilities for commercial fishing, charter fishing, tourist and commercial/private vessels.
- Boat ramps on the Ningaloo side of the peninsula are located at:
    - Tantabiddi Creek - facilities include a concrete launching ramp, car park and public toilets.

Recreational fisheries and charter boat operators are managed by the Western Australian Department of Primary Industries and Regional Development. With an estimated 740,000 people fishing recreationally in WA, it makes a significant contribution to the economy and attracts vast numbers of visitors to the region each year (Department of Fisheries, 2014). The Ningaloo Marine Park (~8 km from the Operational Area) also provides high-quality fishing for species such as spangled emperor, Spanish mackerel and coral trout. The Muiron Islands are 8.7 km from the Operational Area and are used recreationally for swimming, snorkelling and scuba diving.

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).

4.9.5 Commercial Shipping

The Australian Maritime Safety Authority (AMSA) has introduced a network of marine fairways across the NWMR off WA to reduce the risk of vessel collisions with offshore infrastructure. The Operational Area is located outside of these declared and charted shipping fairways. However, there is known shipping activity occurring within the region as the Onslow and Ashburton Port Areas are located within the EMBA.

Refer to Appendix K Master Existing Environment for shipping information in the EMBA. Refer to Figure 4-18 for vessel density and indicative shipping fairways within the Operational Area and EMBA.

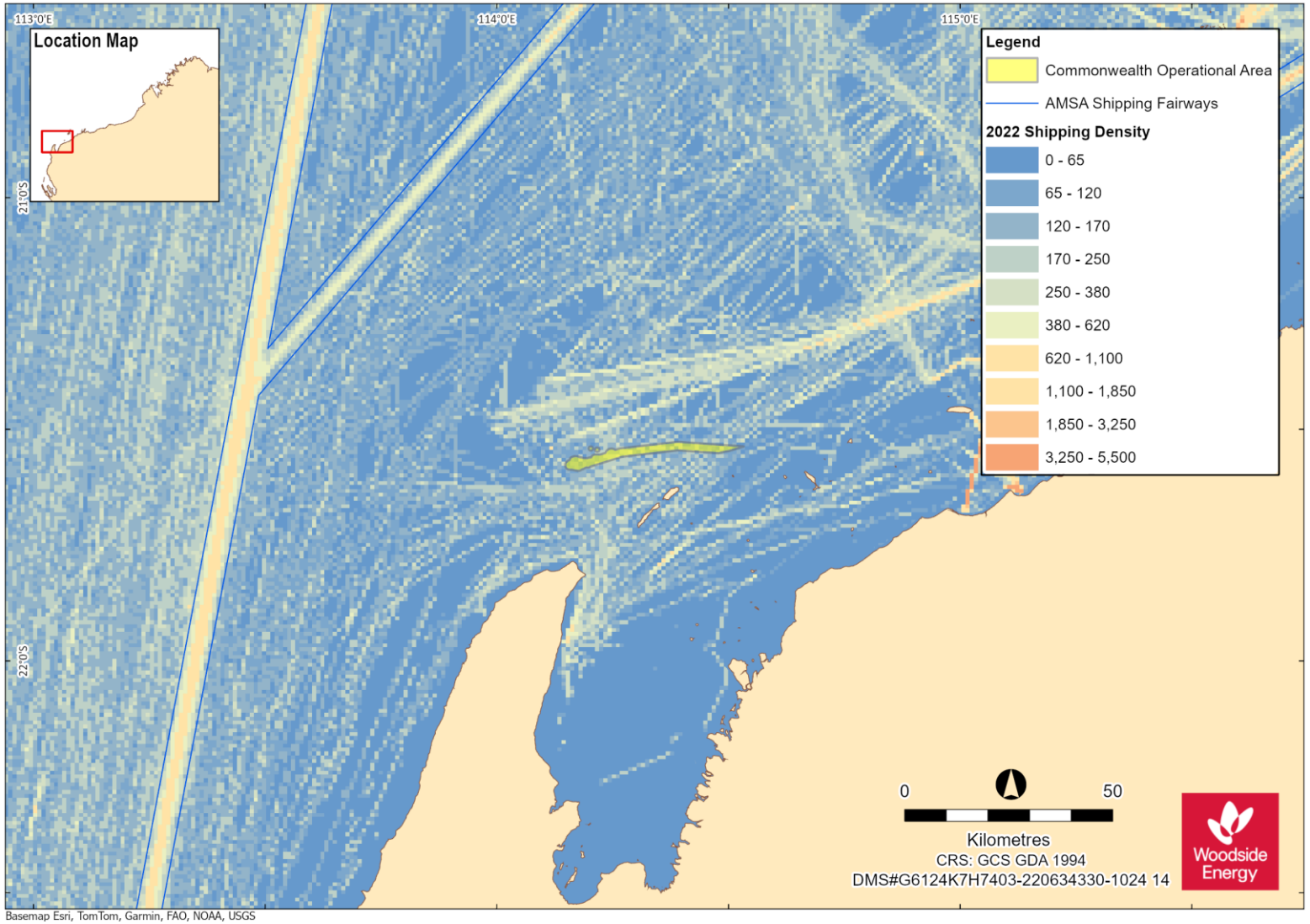

Figure 4-18 Vessel density map for the Operational Area and EMBA, derived from AMSA satellite tracking system data (vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels)

4.9.6 Oil and Gas

Table 4-24 details other oil and gas facilities located or proposed within 50 km of the Operational Area, as shown in Figure 4-19. Section 11.9 of Appendix K Master Existing Environment describes current oil and gas development within the NWMR.

Table 4-24: Other Oil and Gas Facilities located within 50 km of the Operational Area

Facility Name and Operator	Approximate Distance and Direction from Operational Area to the facility (km)
Woodside Pyrenees Facility (Pyrenees FPSO)	The Pyrenees FPSO is 4 km north-west of the Macedon Operational Area, and the Pyrenees Operational Area overlaps the Macedon Operational Area.
Woodside Vincent Development (Ngujima-Yin FPSO)	15 km north-west of Operational Area
Santos Van Gogh/ Coniston/ Novara Development (Ningaloo Vision FPSO)	17 km north-west of Operational Area
Woodside Stybarrow Field (in the process of being decommissioned[5])	30 km north-west

5 Decommissioning of the Stybarrow field is managed under two accepted Environment Plans: 1) Stybarrow Decommissioning and Field Management Plan, accepted 8 Jan 2024, 2) Stybarrow End State Decommissioning Environment Plan, accepted 23 May 2024.

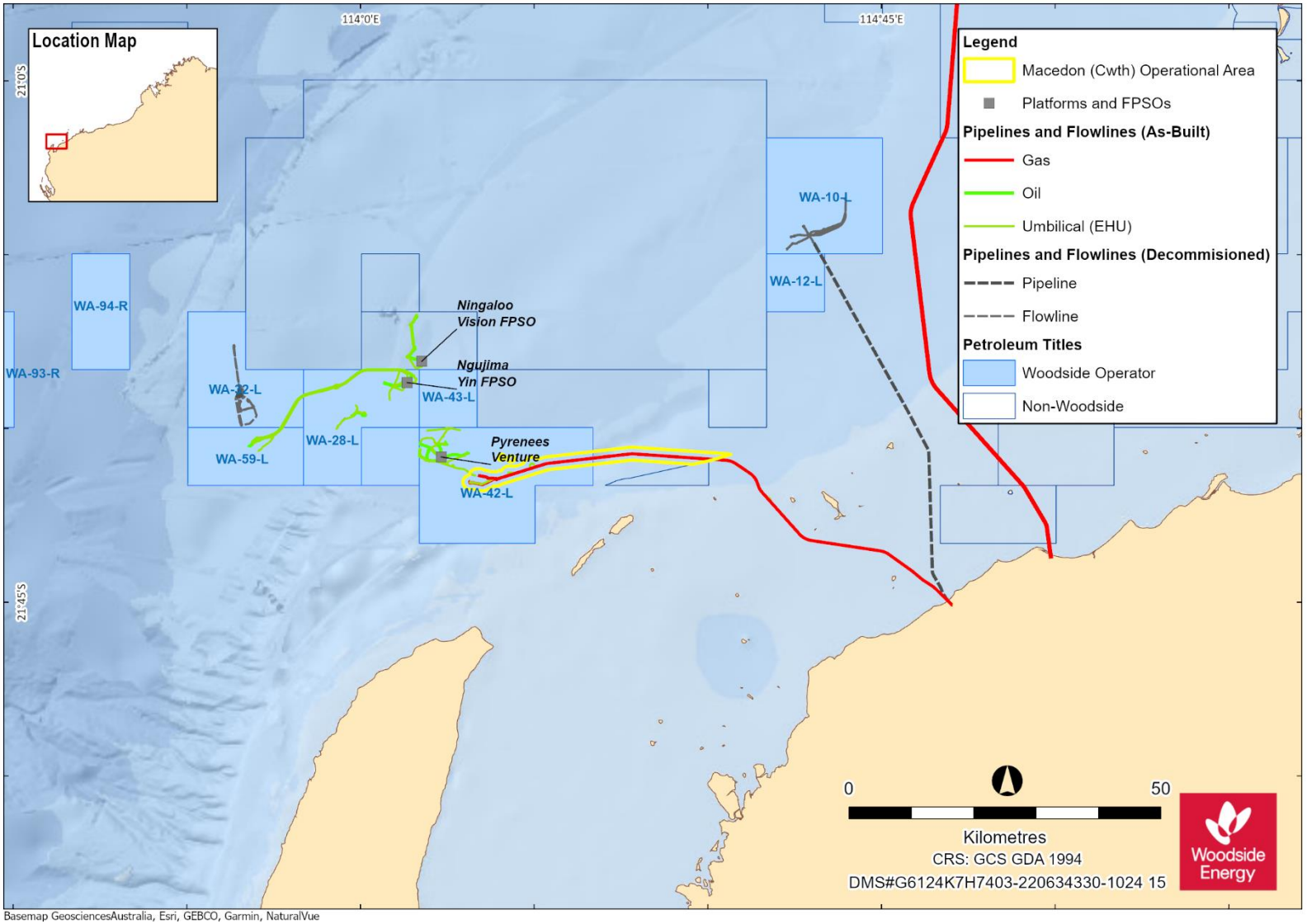

Figure 4-19: Oil and gas Infrastructure within the Operational Area and EMBA

4.9.7 Defence

Department of Defence (DoD) areas, facilities and areas with unexploded ordnances (UXOs) potential overlapping the Operational Area and EMBA are outlined in Table 4-25 and presented in Figure 4-20. Appendix K Master Existing Environment describes key DoD areas and facilities.

Table 4-25: Defence areas, facilities and UXO potential overlapping the Operational Area and EMBA

Defence area/ facility	Presence	
	Operational Area	EMBA
Learmonth air training area (associated with the Learmonth Air Weapons Range Facility)	✓	✓
UXO SDG096 Sea Dumping: Anchor Island. This site is an area used for the dumping at sea of ordnance and other items.	×	✓
Potential Depth Charge UXO DEP022: Northwest of Bessieres Island. This site was an area where Depth Charges were used in WWII and where some depth charges failed to function.	×	✓
UXO 793 and 794: Exmouth Gulf: Prior to WWII, RAN bombarded both land and sea targets on and near the peninsula	×	✓
UXO SDG082: Sea Dumping – Ningaloo. This site is an area used for the dumping at sea of ordnance and other items.	×	✓

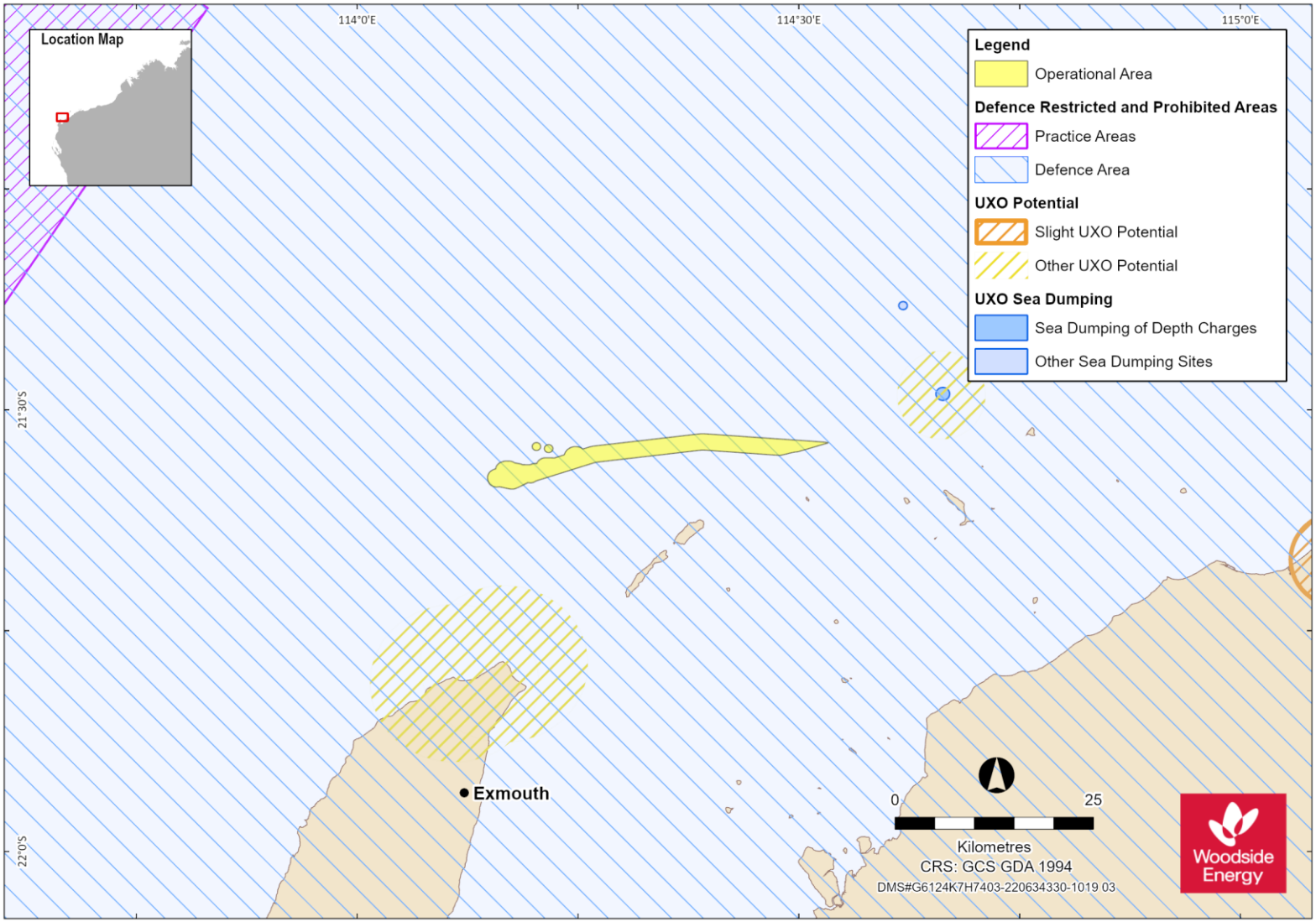

Figure 4-20: Defence areas within the Operational Area and EMBA

5. CONSULTATION

5.1 Summary

Woodside consults relevant persons in the course of preparing an Environment Plan (EP) in accordance with regulation 25 of the Environment Regulations.

Consultation 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 consider and assess claims and objections received from relevant persons and for Woodside to adopt appropriate measures in response to those objections or claims so that the activity is carried out in a manner by which the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable (ALARP) and will be of an acceptable level.

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

For this EP, Woodside has considered both the Operational 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 Petroleum Activities Program (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) of the Environment Regulations to identify relevant persons.
- The second section (Section 5.6 to Section 5.7) details Woodside's approach to accepting feedback and assessment of the merit of each objection or claim, and engaging in ongoing consultation for this EP.

Woodside's consultation record is at 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 of the Environment Regulations (see Section 5.3.4).
- Opportunities provided to persons or organisations to participate in consultation.

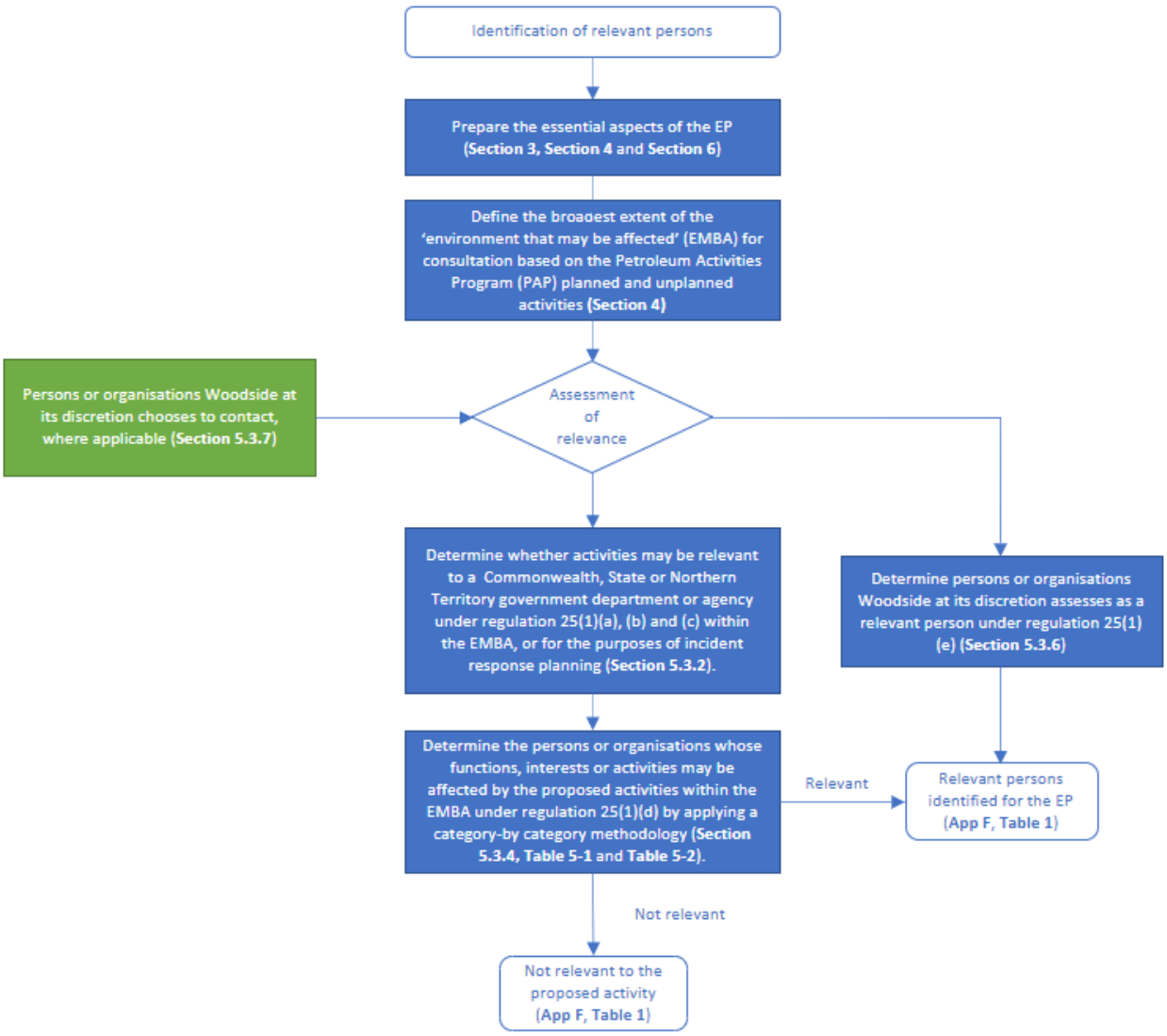

Figure 5-1 Overview of Woodside's methodology to identify relevant persons

5.2 Consultation – General Context

Woodside has a portfolio of quality oil and gas assets and more than 30 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 proposed petroleum activity. The information in the consultation list has been captured from years of experience, it contains insights relating to the type of information particular persons or organisations want to receive during consultation, the appropriate method of consultation for relevant persons and includes appropriate contact details, which are reviewed and updated periodically.

Woodside acknowledges NOPSEMA's Guideline on *Consultation in the course of preparing an environment plan* (12 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) of the Environment Regulations (Section 5.3). This methodology is consistent with NOPSEMA's guideline and demonstrates that, in order to meet the requirements of Regulation 34 (criteria for EP acceptance) when preparing the EP, Woodside understands:

- our planned activities in the Operational Area, being the area in which our planned activities are proposed to occur (see Section 3.2); and
- the geographical extent to which the environment may be affected (EMBA) by risks and impacts from our activities (unplanned) (identified in Section 4.1and assessed in Section 6.7).

Woodside has undertaken consultation in the course of preparing this EP in compliance with regulation 25 of the Environment Regulations, 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 environment plan 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; and
    - any other person or organisation that the titleholder considers relevant (regulation 25(1) of the Environment Regulations).
- 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) of the Environment Regulations);
- allow a relevant person a reasonable period for the consultation (regulation 25(3) of the Environment Regulations); and

- 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) of the Environment Regulations).

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

- is consistent with the principles of ecologically sustainable development (ESD) set out in Section 3A of the EPBC Act – see Section 2
- is intended to reduce the environmental impacts and risks from the activity to ALARP and an acceptable level (regulation 4 of the Environment Regulations);
- is intended to minimise harm to the relevant person and the environment from the proposed petroleum activities and to enable Woodside to consider measures that may be taken to mitigate the potential adverse environmental impacts from the petroleum activity;
- is collaborative. Woodside respects that, for a relevant person, consultation is voluntary. Where the relevant person seeks to engage, Woodside engages with the relevant person with the aim of seeking genuine and meaningful two-way dialogue; and
- 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 9.3.3.1).

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

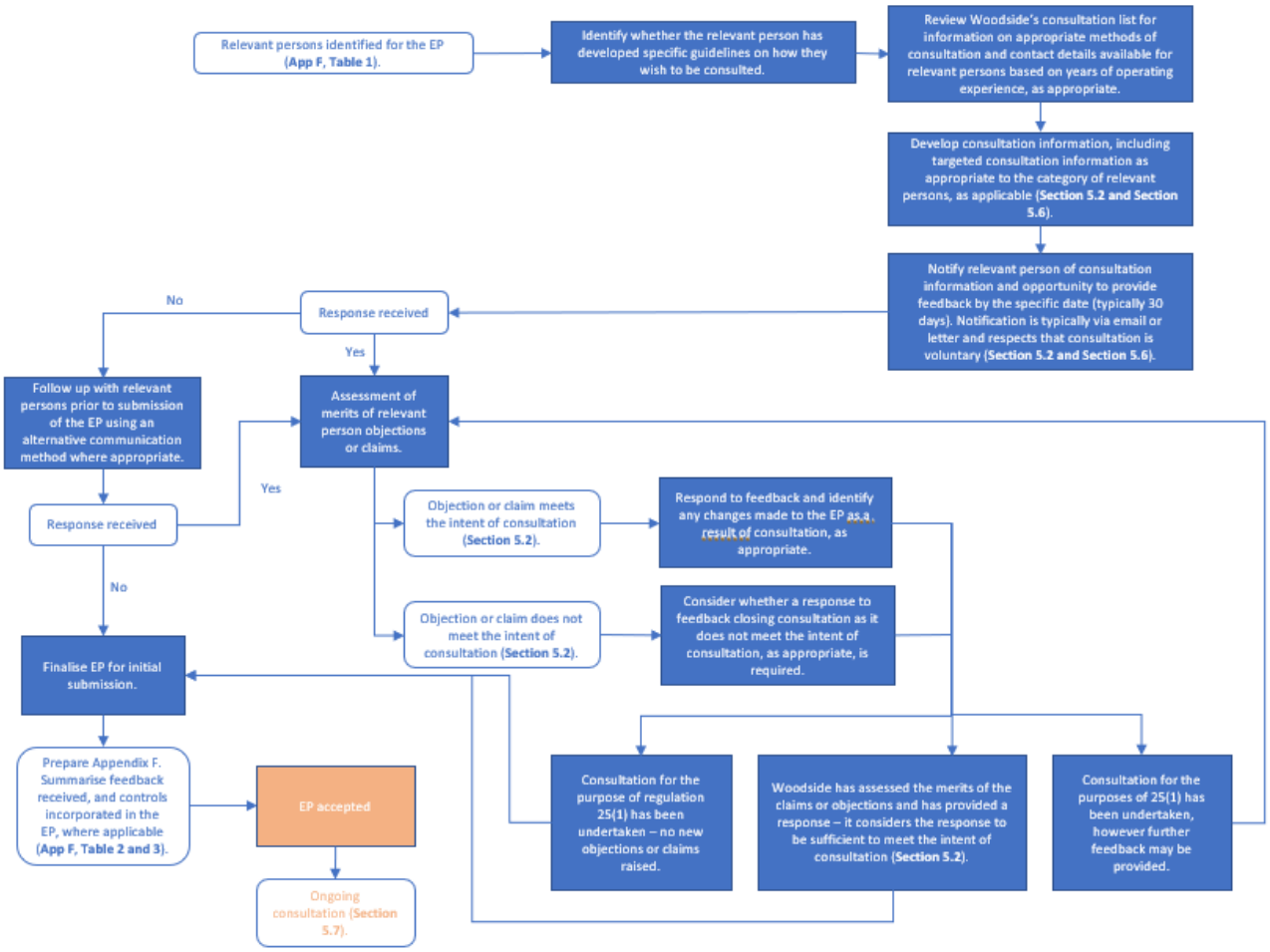

Figure 5-2: Overview of Woodside's consultation approach.

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] FCA9

NOPSEMA:

- GL2086 – Consultation in the course of preparing an environment plan – May 2023
- GN1847 – Responding to public comment on environment plans – January 2024
- GN1344 - Environment plan content requirements - September 2020
- GL1721 – Environment Plan decision making – January 2024
- GN1488 - Oil pollution risk management - July 2021
- GN1785 – Petroleum activities and Australian Marine Parks – January 2024
- GL 1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2024
- PL9028 Managing gender-restricted information – December 2023
- Consultation on offshore petroleum environment plans – Information for the community

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

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

Australian Fisheries Management Authority (AFMA):

- Petroleum industry consultation with the commercial fishing industry

Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF)

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

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

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

WA Department of Transport (DoT):

- Offshore Petroleum Industry Guidance Note

WA Australian Fishing Industry Council (WAFIC)

- Oil and Gas Consultation Framework

Good practice consultation:

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

5.3 Identification of Relevant Persons for Consultation

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

The relevant inquiry for determining relevant persons within the description of regulations 25(1)(a) and (b) of the Environment Regulations 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) of the Environment Regulations, Woodside consults with the Department of the relevant State Minister.

5.3.2 Identification of Relevant Persons under Regulations 25(1)(a), (b) and (c)

Woodside's methodology for identifying relevant persons under regulations 25(1)(a), (b) and (c) of the Environment Regulations 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 department 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 2023), which describes where the Department is a relevant agency under the Environment Regulations, as well as experience and knowledge that Woodside has gained from years of operating. This list is revised from time to time, for example, for the purposes of accommodating government restructures, renaming of departments, shifting portfolios and/or to account for new agencies that might arise.

Woodside has categorised government department or agency groups as follows:

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

Woodside considers each of the responsibilities of the departments and agencies, determining whether those responsibilities overlap with potential risks and impacts specific to the proposed petroleum activity in the EMBA. The assessment is both activity and location based.

Woodside acknowledges the roles and responsibilities of government departments and agencies acting on behalf of various industry participants. For example, AMSA – Marine Safety is responsible for the safety of vessels and the seafarers who are operating in the domestic commercial shipping industry and AHO is responsible for maritime safety and Notices to Mariners. To undertake the Petroleum Activities Program in a manner that prevents a substantially adverse effect on the potential displacement of marine users, Woodside therefore consults AMSA – Marine Safety and AHO on its proposed activities. Woodside considers each of the responsibilities of the departments and agencies and determines those that would either be involved in the incident response itself or in relation to the regulatory or decision-making capacity with respect to planning for the unlikely event of a worst-case hydrocarbon release incident response specific to the Petroleum Activities Program. 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 consults with departments or agencies with interests that overlap planned or unplanned risks and impacts associated with the proposed petroleum activity within the EMBA or would 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) of the Environment Regulations, the meaning of “functions, interests or activities” needs to be understood. In regulation 25(1)(d), the phrase “functions, interests or activities” should be construed broadly and consistently with the objects of the Environment Regulations (regulation 4) and the objects of the EPBC Act (section 3A).

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

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

Woodside’s methodology for determining ‘relevant persons’ for the purpose of regulation 25(1)(d) of the Environment Regulations includes consideration of:

- 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.

5.3.4 Identification of Relevant Persons under Regulation 25(1)(d)

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

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

To identify relevant persons who fall within regulation 25(1)(d) of the Environment Regulations, 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 PAA 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 and persons or organisations Woodside separately chose to contact is set out in Appendix F , Table 1.

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

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

Table 5-1: Categories of relevant persons

Category	Explanation
Commercial fisheries (Commonwealth and State) and peak representative bodies	Commonwealth or State Commercial Fishery with a fishery management plan recognised under the Commonwealth Fisheries Management Act 1991 (Cth) and 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.

Category	Explanation
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 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 Bodies (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.

Table 5-2: Methodology for identifying relevant persons within the EMBA undertaken under subcategory 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[6] that Titleholders develop separate consultation strategies for significant unplanned events (for example 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 F). For Commonwealth and State commercial fisheries, Woodside assesses the potential spatial and temporal extent for interaction with the fishery by reviewing AFMA ABARES and DPIRD Fishcube data within the Operational Area and EMBA (see Section 4.9.2). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.9.2) are assessed as relevant to the proposed activity. However, to avoid over consulting and as requested in WAFIC's guidance, Woodside only consults individual licence holders based on WAFIC's advice. Woodside also utilises WAFIC's consultation service whereby WAFIC: – directly consults fishery licence holders that are assessed as having a potential for interaction in the Operational Area; 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. • 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

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	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 next steps in its methodology: • Using WA Petroleum Titles (DMIRS-011) to determine overlap with other Titleholders or Operators permit areas within the EMBA. • Using Woodside knowledge and operating experience, applying knowledge of other operators in the area. • Woodside produces a map showing the outcome of this assessment. Assessment of relevance: • Titleholders and Operators whose permit areas are identified as having an overlap within the EMBA are assessed as relevant.
Peak industry representative bodies	Woodside assesses relevance for peak industry representative bodies using the following steps in its methodology: • Review of peak industry representative bodies responsibilities that Woodside actively participates in, with consideration of overlap between industry focus area and Woodside's proposed activities within the EMBA. • Review of Woodside's existing consultation list. • Website search to identify whether any additional peak industry representative bodies have been created whose responsibilities may overlap with Woodside's proposed activities within the EMBA. Assessment of relevance: • Peak industry representative bodies whose responsibilities are identified as having an overlap with Woodside's proposed activities within the EMBA are assessed as relevant.
Traditional Custodians (individuals and/or groups/entity) and Nominated Representative Corporations	Consistent with its understanding of the matters discussed in Section 4.9, to identify Traditional Custodian groups or individuals, Woodside: • Uses existing systems of recognition to identify First Nations groups who overlap or are coastally adjacent to the EMBA (for example, recognition provided under native title or cultural heritage legislation, or marine park management plans, or identification by other First Nations groups or entities) • Notifies and invites consultation with First Nations people through their nominated representative corporation (for example PBCs); or, in the case of native title, and where appropriate, the Native Title Representative Body • Requests the nominated representative body to forward the notifications and invitations to consult to their members (members are individual communal rights holders) • Requests advice as to other First Nations groups or individuals that should be consulted • Advertises widely so as to invite self-identification and consultation by First Nations groups and individuals. Further detail to Woodsides 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 (ILUA), 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. • 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 Bodies (RATSIB) is a regional organisation appointed under the Native Title Act 1993 with prescribed functions set out in Part 11 of the Native Title Act 1993, which relate to: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies. • Review of National Native Title Tribunal RATSIB areas that overlap or are coastally adjacent to the EMBA. Assessment of relevance: • Where the area for which a Native Title Representative Body is recognised under the Native Title Act 1993, overlaps with the EMBA or is coastally adjacent to the EMBA, Woodside will assess the Native Title Representative Body as relevant.
Historical heritage groups or organisations	Woodside assesses relevance for groups or organisations whose responsibilities are focused on historical heritage using the following steps in its methodology: • Using the Australasian Underwater Cultural Heritage Database to assess known records Maritime Cultural Heritage sites (shipwrecks, aircraft and relics) within the EMBA (see Section 4.9.1.8). 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 any 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 next steps in its methodology: • Review of Woodside's existing consultation list. • Website search of registered non-government groups or organisations (i.e. registered with an Australian Business Number (ABN) and publicly available contact information) that may have public website material specific to the proposed activity at the time of development of the EP. • Organisation has a publicly available mission statement (or purpose) that clearly describes their collective functions, interests or activities. • Review of current website material to identify targeted information which demonstrates functions, interests or activities relevant to the potential risks and impacts associated with planned activities. • Review of an individual's feedback to consider whether their functions, interests or activities could be impacted. Assessment of relevance: • 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 will be assessed as relevant. • Individual demonstrates their functions, interests or activities could 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) of the Environment Regulations, Woodside has discretion to categorise any other person or organisation as a relevant person under regulation 25(1)(e) of the Environment Regulations.

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) of the Environment Regulations.

5.3.7 Persons or Organisations Woodside Chooses to Contact

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

- that are 'not relevant' pursuant to regulation 25(1) but that Woodside has chosen to seek additional guidance from, for example, to inform the correct contact person that Woodside should consult, or engage with;
- that are 'not relevant' pursuant to regulation 25(1) but have been contacted as a result of consultation requirements changing or updated guidance from the Regulator; and
- where it is unclear what their functions, interests or activities are, or whether their functions, interests or activities may be affected. In this circumstance, engagement is used to inform relevance under Woodside's methodology. Woodside follows the same methodology for assessing a person or organisations relevance as it does during its initial assessment (as described in Figure 5-1 and Section 5.3). The result of Woodside's assessment of relevance during the development of the EP is outlined 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) of the Environment Regulations is outlined at Appendix F , Table 1 and Appendix F , Table 2.

Persons or organisations that Woodside assessed as not relevant but chose to contact at its discretion in accordance with Section 5.3.4 or self-identified and Woodside assessed as not relevant are summarised at Appendix F , Table 1 and Appendix F , Table 3.

5.4 Consultation Material and Timing

Regulation 25(2) of the Environment Regulations 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) of the Environment Regulations 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 Petroleum Activities Program. 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 or Petroleum Activities Area (PAA) depending on the EP, where the activity will take place, the timing and duration of the activity, a location map of the Operational Area or PAA and EMBA, a description of the EMBA, relevant exclusion zones as well as a summary of relevant risks and mitigation and/or 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 to assist a person or organisation to understand the impacts of the proposed activity on their functions, interests or activities may vary and may depend on the degree to which a relevant person is affected. For example, Woodside considers that relevant persons who may be impacted by planned activities in the Operational Area, as a result of temporary displacement due to exclusion zones, may require more targeted information relevant to their functions, interests or activities. Sufficient information may have been provided to a relevant person even where all documents requested by a relevant person have not been provided. Woodside acknowledges NOPSEMA's brochure entitled Consultation on offshore petroleum environment plans information for the community, which advises persons being consulted that they may inform titleholders that they only want to be consulted in the very unlikely event of an oil spill.

Woodside places advertisements in selected local, state and national newspapers. This typically includes the name of the EP Woodside is seeking feedback on, an overview of the activity, the consultation feedback date 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
- maps outlining a persons or organisations 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.

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 an alternative form of communication is expressed by a person or organisation. There might be limitations in how Woodside can consult with relevant persons.

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

Category of relevant person	Typically accepted form of communication
Government departments / agencies – marine	Woodside applies NOPSEMA's guideline for engagement with Commonwealth government departments or agencies in line with 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, and meetings and/or presentation briefings are used on request.
Government departments / agencies – environment	
Government departments / agencies – industry	
Commercial fisheries and peak representative bodies	Commonwealth commercial fisheries: Email is used as the primary form of communication with Commonwealth commercial fisheries in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request. State commercial fisheries and recreational marine users: The Western Australian Department of Primary Industries and Regional Development (DPIRD) has responsibility for managing the Fish Resources Management Act 1994 and Aquatic Resources Management Act 2016, which limits the provision of contact details from the register to the name and business address of licence holders. Alternative forms of communication are at the licence holder's discretion. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request. Peak representative bodies: Email is used as the primary form of communication with commercial fishery and recreational marine user peak representative bodies in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Recreational marine users and peak representative bodies	
Titleholders and Operators	Email is used as the primary form of communication between titleholders and operators in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Peak industry representative bodies	Email is used as the primary form of communication with peak representative bodies in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Traditional Custodians and nominated representative corporations	There are many forms of communication that Woodside uses on a case-by-case basis and as appropriate to or requested by the specific group, such as email, phone calls, meetings and community forums. Other forms of communication are used on request.
Native Title Representative Bodies	There are many forms of communication that Woodside uses on a case-by-case basis and as appropriate to or requested by the specific group, such as email, phone calls, meetings and community forums. Other forms of communication are used on request.
Historical heritage groups or organisations	NOPSEMA's guideline (GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023) for engagement with government departments or agencies is used as a reference for Woodside's approach for communicating with historical heritage groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.

Local government and recognised local community reference/liaison groups or organisations	Local government: NOPSEMA's guideline (GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023) for engagement with local government is used as a reference for Woodside's approach for communicating with historical heritage groups or organisations. Community reference/liaison groups and chambers of commerce: Email and presentations are used as the primary form of communication with local community reference/liaison groups or organisations in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Other non-government groups or organisations	Email is used as the primary form of communication with Other non-government groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Research Institutes and Local conservation groups or organisations	Email is used as the primary form of communication with research institutes and local conservation groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.

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

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

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

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

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

"it must be taken to be the regulatory intention that the consultation requirement cannot be one that is incapable of being complied with within a reasonable time..."[7]

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; and
- 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.

5.4.2 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).[8] Consultation is a "real world activity" and must be capable of reasonable discharge.[9] 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.[10]

When the titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, the regulation 25 consultation requirements are met.[11] Meeting these obligations requires evaluative judgment 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

7 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [136].
8 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 [89], [98], [103]-[104] and [109].
9 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at [89].
10 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at [96] and [103].
11 Explanatory Statement, Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, page 29.

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.[12]

When a titleholder is required to provide an opportunity to consult, the titleholder is not required to obtain consent to engage in the activity from the person being consulted or confirmation from a person being consulted that consultation is complete.

The Federal Court has commented that a "reasonable opportunity" for consultation must be afforded to relevant persons.[13] 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 environmental impacts and concerns.

Woodside has discharged its duty under regulation 25 of the Environment Regulations. Woodside considers that consultation under regulation 25 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 it has further information to share or claims that consultation under regulation 25 has not completed, Appendix F , Table 2 and Table 3 provide reasons specifically why Woodside considers consultation under regulation 25 has been met in relation to that relevant person.

5.5 Context of Consultation Approach with First Nations

To comply with regulation 25 of the Environment Regulations, 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 of the Environment Regulations and guidance provided in the Tipakalippa Appeal (Section 5.2). Woodside's consultation methodology allows for a sufficiently broad capture of Traditional Custodian relevant persons, provides for informed consultation, follows cultural protocols and allows a reasonable opportunity for consultation with Traditional Custodians whose functions, interests or activities may be affected by the activity described in this EP (Section 5.5.3.1 to 5.5.3.4).

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 of the Environment Regulations 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,[14] and how obligations to consult "each and every" person under regulation 25 of the Environment Regulations should be interpreted in a similarly pragmatic way so that consultation is workable. The reference to NTA authorities was made by analogy:

12 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].
13 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].
14 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [95], [98], [103]-[104] and [109].

"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." [15]

"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"[16] *(emphasis added).*

"there is no definition of what constitutes "consultation for the purpose of ref 11A [updated to 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"[17] (emphasis added).

The Judgment in the Tipakalippa Appeal makes 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.[18] 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 the required for there to be compliance with regulation 25. Nominated representative corporations (such as Prescribed Bodies Corporates (PBCs) established under the NTA) have a designated role of representing the views of their member Traditional Custodians. They have established methods for engaging with their own members. Woodside will not undermine the purpose and authority of nominated representative corporations by requiring full group meetings where the nominated representative corporations have not requested engagement of members via full group meetings. It is not appropriate for titleholders to direct or challenge the nominated representative corporations on how to engage with their members.

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

5.5.2 Consultation Method

Woodside's First Nations team has experience in engaging and working with First Nations organisations and individuals, including having worked within the Commonwealth native title and cultural heritage systems and state and territory cultural heritage and land rights systems. The team understands the complexities of making information accessible to groups and individuals and engaging in accordance with First Nations groups' established channels of communication and methods of consultation. The First Nations team exercises its professional judgement and is respectful of long-standing relationships (where in place) when considering consultation with First Nations groups. The First Nations team's approach is also informed by the established systems of recognition for First Nations groups and their nominated representative corporations within particular jurisdictions.

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

15 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [98].
16 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [96].
17 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [104].
18 Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [47] and [48].

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

Native title determinations provide certainty about the appropriate Traditional Custodian groups that have the cultural authority to speak for country adjacent to the EMBA, and help Woodside to identify Traditional Custodian persons and groups asserting Traditional Custodianship. The Judgment in the Tipakalippa Appeal endorses methods of consultation with groups of relevant persons that are appropriate and adapted to the characteristics of groups.[19] Woodside's consultation methodology is adapted and appropriate to the recognised systems of communal interests in Western Australia.

In Western Australia (relevant for this EP), Woodside has sought to follow the established, effective and respectful means of communication used by Native Title Representative Bodies and nominated representative corporations (including PBCs) with their respective First Nations communities. Woodside follows these processes for the appropriate broad capture of individuals' awareness of our activities, to self-identify (Section 5.5.3.1), and to provide feedback to inform the management of environmental impacts and risks.

Using these processes, Woodside communicates information about EPs by:

- advertising in relevant 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 Consultation Summary Sheets with information developed by an Indigenous member of the First Nations Team to remove jargon and provide relevant information for people to have informed understandings about the activities;
- direct contact through nominated representative corporations;
- utilising social media (i.e. Facebook/Instagram), texts and emails. These mediums are the preferred communication methods used by Traditional Custodians throughout Western Australia and on that basis used by Native Title Representative Bodies and other government agencies and industry, to engage with Traditional Custodians or call meetings. First Nations woman, Professor Bronwyn Castle through 10 years of research found "Social media is an intrinsic part of daily life. The use of Facebook is around 20 per cent higher [among First Nations people] than the national average across all geographical locations" (Social media mob: being Indigenous online, Professor Bronwyn Carlson (2018).
- For ongoing consultation post regulation 25 consultation, Woodside has a Program of Ongoing Engagement with Traditional Custodians which 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.
- Woodside has members of its First Nations team who are based in Karratha and Roebourne and who serve as on-Country points of contact for First Nations organisations and individuals. These team members have broad local knowledge and established, on-the-ground relationships within communities. This helps contribute to positive outcomes including encouraging First Nations attendance and involvement at Woodside's information sessions and Community roadshows. Team members on the ground engage in a great deal of preparatory work including by distributing information and providing notice to the community to support First Nations attendance at information sessions and Community roadshows.

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

- 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 whom 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"[20]. 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[21]. When the First Nations team is told that a particular value is cultural by an individual Traditional Owner, that information is taken back to the relevant cultural authority to test its broad acceptance. In the case of gender sensitive information, that information would be restricted to the specific gender within the community.

5.5.3 Identification of Relevant Persons

To undertake consultation, Woodside has developed a methodology for identifying relevant persons, in accordance with regulation 25(1) of the Environment Regulations (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 5.5.3.4). 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 corporations. 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 5.5.3.4 below, individuals are also given the opportunity to self-identify, consult and provide their own feedback on the proposed activity. When

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

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)[22].

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.

5.5.3.1 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 5.5.3.1). Woodside's approach to providing individual Traditional Custodians the opportunity to self-identify and consult for an Environment Plan is as follows:

- Woodside applies the principles of self-determination when consulting with Traditional Custodians by consulting through the Traditional Owners' authorised representative entities.
- Recognising the function of nominated representative corporations (such as PBCs) and Native Title Representative Bodies to represent communal interests and manage cultural values, Woodside requests that the information provided to representative entities is provided to their members but Woodside recognises the process is voluntary and Woodside cannot compel them to do so nor seek to audit the representative entities for compliance with any request.
- Representative entities cannot provide membership details to Woodside due to individual confidentiality requirements.
- Woodside requests advice as to who else Woodside should be consulting but recognises the process is voluntary and cannot compel nominated representative corporations to provide this information.
- Modern Indigenous engagement practises rely on the building and maintaining of respectful relationships. To date, most nominated representative corporations to date 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

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

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.

5.5.3.2 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, specifically designed for Traditional Custodians, so that information is provided in a form that is readily accessible and appropriate. The targeted Summary Consultation Sheet developed and reviewed by Woodside's First Nations Engagement Team and First Nations staff so that content is appropriate to the intended recipients, which is then provided to relevant Traditional Custodian groups. Phone calls are made to provide context to the consultation.

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

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

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

5.5.3.3 Reasonable Period for Consultation

Woodside seeks to consult in order to support preparation of its EP. Woodside recognises that what constitutes a reasonable period for consultation should be considered on a case-by-case basis, with reference to the nature, scale and complexity of the activity (Section 5.4.2).

5.5.3.4 Discharge of Regulation 25

Woodside's consideration and approach to discharging regulation 25 of the Environment Regulations for relevant persons is discussed in Section 5.4.2. In addition to this, Woodside has considered the application of regulation 25 specifically to First Nations based on the Tipakalippa Appeal.

In relation to Traditional Custodian relevant persons (and all relevant persons), Woodside has discharged its duty under regulation 25. Woodside considers that consultation under regulation 25 is complete (Section 5.4.2).

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 environment plan and approval process, for example, statements of fundamental objection to offshore petroleum activities or information containing personal threats or profanities. Under regulation 34(g), there is no requirement for a relevant person to agree or confirm that they have been adequately consulted.

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

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

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

5.7 Ongoing Consultation

Consultation can continue to occur during the life of an EP, including after an EP has been accepted by NOPSEMA.

As per Woodside's ongoing consultation approach (refer to Section 9.3.3.1), 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 8.2.3.1).

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

6.1 Overview

This section presents the impact and risk analysis and evaluation, EPOs, EPSs and MC for the Petroleum Activities Program, using the methodology described in Section 2.

6.2 Impact and Risk Analysis and Evaluation

As required by regulation 21(5) and 21(6) of the Environment Regulations, the analysis and evaluation demonstrate that the identified risks and impacts associated with the Petroleum Activities Program are reduced to ALARP, are of an acceptable level and consider all operations of the activity, including potential emergency conditions. The impact assessment for planned activities has been based on the size of the Operational Area.

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

- Planned activities (routine and non-routine) which have the potential for inherent environmental impacts;
- Unplanned events (accidents, incidents or emergency situations) with an environmental consequence, termed risks.

Within these categories, impact and risk assessment groupings are based on environmental aspect[23] such as emissions and physical presence. In all cases the worst-case risk was assumed.

The ENVID identified 13 sources of environmental impacts and risks. A summary of these is provided in Table 6-1 and Table 6-2. The assigned risk ratings were determined with controls in place as described in Section 2.6.3.

The analysis and evaluation for the Petroleum Activities Program indicate 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 6.6 and 6.7.

[23] *An environmental aspect is an element of the activity that can interact with the environment.*

Table 6-1: Environmental impact and risk analysis summary table – planned activities

Aspect	EP Section	Source of Impact	Key Potential Environmental Impacts (Refer to relevant EP section for details)	Severity	Acceptability
Planned Events					
Physical presence: disturbance to marine users	6.6.1	Presence of IMMR vessels and subsea infrastructure excluding or displacing other users from PSZ and operational area.	Interference with other sea users	1 – Minor	Tolerable
		Exclusion of other marine users from the PSZ			
		Interactions affecting cultural heritage values	Disturbance of cultural features or heritage values.		
Physical presence: disturbance to the seabed	6.6.2	Presence of subsea infrastructure modifying marine habitats.	Minor changes/ impacts to seabed habitat in/ adjacent to infrastructure footprint.	1 – Minor	Tolerable
		Subsea IMMR activities resulting in damage to seabed	Damage to seabed. Disturbance of cultural features or heritage values.	1 – Minor	Tolerable
Routine acoustic emissions: generation of noise	6.6.3	Noise generated within the Operational Area from: • Wells, pipeline and subsea infrastructure. • An IMMR vessel; and • Subsea IMMR activities.	Noise to marine environment causing interference to marine fauna.	1 – Minor	Tolerable
Routine and non-routine discharges: discharge of hydrocarbons and chemicals during subsea operations and activities	6.6.4	Discharges of control fluid	Localised, short-term decrease in water quality around subsea infrastructure within Operational Area.	1 – Minor	Tolerable
		Discharges of chemicals and hydrocarbons from subsea intervention works.	Potential slight short-term, localised decrease in water quality at release location during IMMR activities.	1 – Minor	Tolerable
		Discharge of chemicals remaining in subsea infrastructure and/or the use of chemicals for subsea IMMR activities.	Potential slight short-term, localised decrease in water quality at release location during IMMR activities.	1 – Minor	Tolerable
Routine and non-routine discharges: discharges of sewage, putrescible waste, grey water, bilge water, drain water, cooling water and brine	6.6.5	Routine discharges from IMMR vessel utility systems and drains (sewage, greywater, RO brine reject, cooling water, food waste, rainfall/deck washdown water, firewater deluge testing).	Minor localised nutrient or salinity increase, addition of surfactants (soaps and detergents) and chemicals to water column.	1 – Minor	Tolerable
Routine and non-routine atmospheric emissions and GHG Emissions	6.6.6	Emissions generated by IMMR activities and associated vessels.	Greenhouse gas (GHG) emissions and reduction in local air quality	1 – Minor	Tolerable
		Macedon emissions associated with onshore processing, third party transportation and combustion by end users.	GHG emissions.	1 – Minor	Tolerable
Routine light emissions: light emissions from vessel operations	6.6.7	Light emissions from an IMMR vessel	Localised potential for disturbance of marine fauna.	1 – Minor	Tolerable

Table 6-2: Environmental impact and risk analysis summary table – unplanned events

Aspect	EP Section	Source of Risk	Key Potential Environmental Impacts (Refer to relevant EP section for details)	Severity	Likelihood	Risk Level	Acceptability
Unplanned Events (Accidents / Incidents)							
Unplanned hydrocarbon release: vessel collision	7.1.1	Loss of marine diesel from a subsea support vessel	Contamination / pollution of water column. Temporary and localised reduction in water quality with potential for acute toxic response over localised area. Medium-term impacts to offshore and nearshore areas Short-term interference with or displacement of other sea users.	3 – Substantial	Highly Unlikely	3	Tolerable
Unplanned hydrocarbon release: Loss of well containment	7.1.2	Release of hydrocarbons from loss of subsea well containment	Contamination / pollution of water column. Temporary and localised reduction in water quality with potential for acute toxic response over localised area. Contribution to greenhouse gas effect.	2 – Measurable	Highly Unlikely	0.9	Tolerable
Unplanned hydrocarbon release: subsea infrastructure	7.1.3	Release of hydrocarbons resulting from loss of containment form subsea infrastructure	Contamination / pollution of water column. Temporary and localised reduction in water quality with potential for acute toxic response over localised area.	2 – Measurable	Unlikely	3	Tolerable
Unplanned discharges: Hazardous and non-hazardous waste management	7.1.4	Loss of non-hazardous solid waste (rubbish) overboard.	Impacts to marine fauna.	2 – Measurable	Highly Unlikely	0.9	Tolerable
		Accidental leaks from storage and equipment, ROV, AUV hydraulic fluid	Localised contamination / pollution	1 – Minor	Possible	1	Tolerable
Physical presence: Seabed Disturbance from Dropped Objects	7.1.5	Dropped objects from vessels	Damage to seabed. Disturbance of cultural features or heritage values.	1 – Minor	Possible	1	Tolerable
Physical presence: Vessel collision with marine fauna	7.1.6	Physical presence of vessels.	Potential injury or death of marine fauna (single animal), including protected species.	2 – Measurable	Highly Unlikely	0.9	Tolerable
			Interference of vessel with migratory populations.				
Physical presence: Introduction of invasive marine species (IMS)	7.1.8	Invasive species in vessel ballast tanks or on vessels / submersible equipment.	Introduction of invasive marine species to area leading to major impact to native species.	4 – Serious	Highly Unlikely	0.9	Tolerable

6.2.1 Cumulative Impacts

Woodside has assessed the cumulative impacts of the Petroleum Activities Program in relation to other relevant petroleum activities which could realistically result in overlapping temporal and spatial extents. Other facilities located in close proximity to the Operational Area consist of Pyrenees, which lies 4 km northwest of the Operational Area. However, given the sources of environmental risks and impacts from the Petroleum Activities Program are concentrated around the Macedon field production system, and do not involve regular operations emissions and discharges, the potential for cumulative impacts is low. Cumulative impacts are discussed for sources of risk and impacts where such impacts were deemed to be credible.

6.3 Environmental Performance Outcomes, Standards and Measurement Criteria

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

The EPOs, EPSs and MC specified in this EP are consistent with legislative requirements and Woodside's standards and procedures. They have been developed based on the codes and standards, good industry practice and professional judgement outlined in Section 2.6 as part of the acceptability and ALARP justification process.

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

EPOs are set so that they are consistent with the principles of ESD as defined in section 3A of the EPBC Act and demonstrated through the acceptability process (described in Section 2.7.2), which is applied to the aspects in Section 6, taking into consideration the principles of ESD. The EPOs have been set at a level of environmental performance that is proportionate to the identified environmental impact or risk.

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

A risk-based EPO ties in with Woodside's risk management processes so that risk is maintained within a level that has been evaluated as being appropriate to the nature and scale of the risk. WMS and relevant controls are used to identify and treat potential step-outs (resulting in an increased likelihood) from expected controls performance or integrity envelopes.

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

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

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

6.4 Presentation

The analysis and evaluation (ALARP and acceptability), EPOs, EPSs and MC are presented in tabular form throughout this section, as shown in the sample 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.

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

Impacts and Risks Evaluation Summary *Summary of ENVID outcomes*														
	Environmental Value Potentially Impacted *Regulations 13(2)(3)*							***Evaluation*** *Section 2*						
Source of Risk *Regulation 13(1)*	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Summary of source of risk / impact														

Description of Source of Risk or Impact
Description of the identified risk/impact including sources or threats that may lead to the impact/risk or identified event. Regulation 21(1).

Impact or Consequence Assessment
Environmental Value/s Potentially Impacted
Discussion and assessment of the potential impacts to the identified environment value/s. Regulation 21(5) (6). Description of potential impacts to environmental values aligned to Woodside Risk Matrix consequence descriptors.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[24]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
ALARP/Hierarchy of Control Tools Used – Section 2.7.1				
Summary of control considered to ensure the impacts and risks are continuously reduced to ALARP. *Regulation 21(5)(c).*	*Technical/logistical feasibility of the control.* *Cost/sacrifice required to implement the control (qualitative measure).*	*Qualitative commentary of impact/risk that could be averted/ environmental benefit gained if the cost/ sacrifice is made and the control is adopted.*	*Proportionality of cost/sacrifice vs environmental benefit. If proportionate (benefits outweigh costs), the control will be adopted. If disproportionate (costs outweigh benefits), the control will not be adopted.*	*If control is adopted, reference to Control No. provided.*

[24] *Qualitative measure*

Demonstration of ALARP
ALARP Statement Made on the basis of the environmental risk/impact assessment outcomes, use of the relevant tools appropriate to the Decision Type (Section2.6.1) and a proportionality assessment. Regulation 34 (b).

Demonstration of Acceptability
Acceptability Statement Made on the basis of applying the process described in Section 2.7.2 and taking into account internal and external expectations, risk/impact to environmental thresholds and use of environment decision principles Regulation 34(c)

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO No. **S:** *Specific performance that addresses the legislative and other controls that manage the activity, and against which performance by Woodside in protecting the environment will be measured.* **M:** *Performance against the outcome will be measured through implementation of the controls via the MC.* **A:** *Achievability/feasibility of the outcome demonstrated via discussion of feasibility of controls in ALARP demonstration. Controls are directly linked to the outcome.* **R:** *The outcome will be relevant to the source of risk/impact and the potentially impacted environmental value[25].* **T:** *The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.*	**C No.** *Identified control adopted to ensure that the impacts and risks are continuously reduced to ALARP. Regulation 21(5) (c).*	**PS No.** *Statement of the performance required of a control measure. Regulation 21(7)(a).*	**MC No.** *MC for determining whether the outcomes and standards have been met. Regulation 21(7)(c).*

6.5 Environment Risk/Impacts not Deemed Credible

The ENVID identified a source of environmental risk / impact that was assessed as not being applicable (not credible) within or outside the Operational Area as a result of the Petroleum Activities Program, and therefore, which were determined to not form part of this EP.

Physical presence of the subsea infrastructure, causing interference to tourism and recreation – there are such low levels of tourism and recreation in the Operational Area that this source is not worthy of further assessment. Access issues for fishers are included in the EP, with controls including consultation and mapping.

[25] *Where impact/consequence descriptors are capitalised and presented within EPOs in Section 5; performance level corresponds with those aligned with the Woodside Risk Matrix (refer Section 2.6.3).*

Waste generation, causing increased landfill and associated pollution impacts – this indirect impact is a few steps removed from the Petroleum Activities Program and this source of environmental impact is not usually assessed in EPs.

Diesel spill during bunkering is not included in the EP, as offshore bunkering was determined in the ENVID not to be required for the activity.

6.6 Planned Activities

6.6.1 Physical Presence: Disturbance to Marine Users

Context		
Field Layout and Description – Section 3.6 Subsea Support Vessels – Section 3.9 Subsea Inspection, Monitoring, Maintenance and Repair Activities – Section 3.8	Socio-cultural Environment – Section 4.9	Consultation – 5

Impacts and Risks Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Presence of IMMR vessels and subsea infrastructure displacing other marine users from the Operational Area.							x	A	1 -Minor	-	-	LCS GP	Tolerable	EPO 1
Exclusion of other marine users from the PSZ							x	A	1 -Minor	-	-	LCS GP		

Description of Source of Impact

During routine operational activities and start-up of a new production well up to two IMMR vessels will be within the Operational Area at any one time. The presence of these vessels will be intermittent throughout the Petroleum Activities Program, with the duration and specific location these activities dependent on the activity being undertaken. Subsea support vessels undertaking the Petroleum Activities Program meet maritime requirements, including appropriate lighting and communication with other vessels.

During operations the subsea infrastructure may cause displacement of other marine users or require them to modify their activities. The Australian Hydrographic Office (AHO) has been notified of the location of subsea infrastructure for marking on nautical charts. Water depths of subsea infrastructure range between 60 and 180m.

As required, a 500m radius PSZ, measured from the centre of the four wells prohibits non-project vessels/other vessels (e.g., fishing and shipping) from entering unless authorised by Woodside. The total PSZ encompasses a total area of approximately 10.56km^2. Other marine users are permanently excluded from the PSZ regardless of whether any vessels are present in the Operational Area or not.

Impact Assessment

Exclusion and Displacement of Other Users

Exclusion and/or displacement of other marine users may occur from:

- Subsea support vessels performing IMMR activities,
- Permanent presence of subsea infrastructure and wells, and

- Permanent presence of the PSZ.

Commercial Fishing

A number of commercial fisheries overlap the Operational Area and are detailed in Section 4.9.2. Commercial fishing vessels in the vicinity of the Operational Area are most likely to be licenced under the Pilbara demersal scalefish fishery and may employ several gear types (including trap and line). Potential impacts to commercial fishers depend on the use of the area by fishers, in addition to the temporal and spatial extent of the presence of vessels and facilities/infrastructure. Potential impacts to commercial fisheries include damage to fishing equipment and potential physical displacement from fishing grounds. The presence of subsea support vessels in the operational area is considered to be localised displacement/avoidance by commercial fishing vessels within the immediate vicinity.

The overlap of the Operational Area with commercial fishing activity may temporarily exclude fishers from the area resulting in a potential displacement and potential loss of gear (particularly in relation to deployed traps). The potential impact to hazard of the commercial fisheries in the Operational Area is limited to the navigational hazard of subsea support vessels and localised displacement/avoidance by commercial fishing vessels within the immediate vicinity.

As such, the potential impact is considered to be localised with no lasting effect. The presence of subsea infrastructure could present a hazard to bottom trawl fisheries due to risk of equipment entanglement and subsequent equipment damage/loss. The Pilbara Demersal Scalefish Fishery employs several gear types, including trawling. The Operational Area overlap with the bottom portion of the fishery. No trawling effort is expected to occur in the Operational Area; the potential for trawling gear to be snagged on subsea infrastructure is considered to be remote.

Tourism and Recreation

Tourism and recreation activity in the Operational Area is expected to be infrequent, with recreational and charter fishing from vessels the only tourism and recreation activities identified as potentially occurring in the Operational Area. Consultation outcomes did not indicate any recreational fishing occurs within the Operational Area (Section 5). Any recreational and charter fishing from vessels is largely undertaken using lines and is therefore unlikely to interact with the subsea infrastructure.

Given the distance from boat launching facilities, lack of natural attractions (e.g., reefs or shoals) and the water depth of the Operational Area, very little recreational or charter fishing is expected to occur. As such, impacts to recreational and charter fishing are expected to be localised and of no lasting effect.

Shipping

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

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

To reduce the likelihood of interactions between commercial vessels and offshore facilities, AMSA have introduced a series of shipping fairways within which commercial vessels are advised to navigate. The fairways are not mandatory; however, AMSA strongly recommends commercial vessels remain within the fairway when transiting the region. The use of shipping fairways is considered to be good seafaring practice, with AUSREP data from AMSA indicating cargo ships and tankers routinely navigate within the established fairways.

The Operational Area is outside these declared and charted shipping fairways.

The presence of subsea infrastructure and occasional subsea support vessels will not result in impacts to commercial shipping beyond a localised exclusion of shipping traffic from the PSZ and the temporary displacement of commercial shipping due to the presence of subsea intervention vessels undertaking activities in the Operational Area.

Oil and Gas

The nearest oil and gas facilities to Macedon are the Pyrenees and Ngujima-Yin FPSOs. Both are operated by Woodside. Based on operational experience in the region and the consultation with the oil and gas industry, any impacts from the Petroleum Activities Program will not affect oil and gas marine users.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[26]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				

[26] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[26]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Vessels compliant with Marine Orders for safe vessel operations: Marine Order 21 (Safety and emergency procedures) 2016 Marine Order 27 (Safety of navigation and radio equipment) 2016 Marine Orders 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
Permanent infrastructure shown on AHO marine charts	F: Yes CS: Minimal cost. Standard practice.	Notification of AHO will enable them to update maritime charts, thereby reducing the likelihood of unplanned interactions with Macedon infrastructure.	Control based on legislative requirement – must be adopted.	Yes C 1.2
Good Practice				
Notify AHO of activities where vessels will be in the Operational Area, but outside of the PSZ >3 weeks, no less than four working weeks prior to scheduled activity commencement date.	F: Yes CS: Minimal cost. Standard practice.	Notification of AHO will enable them to issue a Maritime Safety Information Notification (MSIN) and Notice to Mariners (NTM) thereby reducing the likelihood of unplanned interactions with other vessels.	Benefits outweigh cost sacrifice.	Yes C 1.3
Notify AMSA Joint Rescue Coordination Centre (JRCC) of activities where vessels will be in the Operational Area, but outside of the PSZ >3 weeks, 24-48 hours before activities commence.	F: Yes CS: Minimal cost. Standard practice	Communicating the Petroleum Activities Program to other marine users ensures that are informed and aware should emergency response be required.	Benefits outweigh cost sacrifice.	Yes C 1.4
Professional Judgement – Eliminate				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[26]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Reduce the size of the PSZ.	F: No. Potential for increase in gear snagging on infrastructure, and process safety risks therefore no benefit from a reduction in risk. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
Over-trawl protection on subsea infrastructure.	F: Yes. Over-trawl protection on subsea infrastructure could mitigate against the potential for commercial fishing trawl gear to damage infrastructure or result in gear loss. CS: Significant additional cost associated with the design and installation of trawl protection on subsea infrastructure.	No reduction in addition to adopted controls.	Disproportionate. The cost/sacrifice outweighs the benefits gained.	No
ALARP Statement On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the potential impacts of the physical presence of the subsea infrastructure and vessels on other users. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.				

Demonstration of Acceptability
Acceptability Statement The impact assessment has determined that, given the adopted controls, the physical presence of the subsea infrastructure and the infrequent and brief presence of vessels represents a minor impact that is unlikely to result in any potential impact greater than an isolated temporary community disturbance to commercial fishing, cultural values, recreational fishing and/or shipping. The adopted controls are considered good oil-field practice/industry best practice and meet requirements of Australian Marine Orders, and expectations of AMSA and AHO provided in consultation with stakeholders. Further opportunities to reduce the impacts and risks have been investigated above. The potential impacts and risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of physical presence of the Macedon field production system and support vessels to a level that is broadly acceptable, and demonstrate that the EPOs are met.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 1 Impacts to relevant stakeholders from the Petroleum Activities Program planned activities will be limited through the provision of appropriate information / notification.	C 1.1 Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Orders 21 (Safety of navigation and emergency procedures) 2016; • Marine Order 27 (Safety of navigation and radio equipment) 2016 • Marine Orders 30 (Prevention of Collisions) 2016.	PS 1.1 Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class.	MC 1.1.1 Marine verification records demonstrate compliance with standard maritime safety procedures (Marine Orders 21, 27 and 30).
	C 1.2 Permanent infrastructure shown on AHO maritime charts	PS 1.2 Woodside to notify AHO of location of permanent infrastructure	MC 1.2.1 Records demonstrate that permanent Macedon infrastructure is shown on AHO maritime charts
	C 1.3 Notify AHO of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks, no less than four working weeks prior to scheduled activity commencement date.	PS 1.3 Woodside to notify AHO of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	MC 1.3.1 Records demonstrate that AHO notifications complete.
	C 1.4 Notify AMSA Joint Rescue Coordination Centre (JRCC) of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks, 24-48 hours before activities commence.	PS 1.4 AMSA's JRCC is notified 24 to 48 hrs before mobilisation for activities in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks, for awareness should emergency response be required.	MC 1.4.1 Records demonstrate a once-off notification provided to AMSA's JRCC within required timeframes, before mobilisation

6.6.2 Physical Presence: Disturbance to the Seabed

Context		
Field layout and description – Section 3.6 Subsea Support Vessels – Section 3.7 Subsea Inspection, Monitoring, Maintenance and Repair Activities – Section 3.8	Physical Environment – Section 4.4 Biological Environment – Section 4.5 Cultural Heritage – Section 4.9.1	Consultation –5

Impacts and Risks Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Presence of subsea infrastructure modifying marine habitats.		x	x		x			A	1 -Minor	-	-	LCS GP PJ	Tolerable	EPO 2 EPO 3
Subsea IMMR activities resulting in damage to seabed.		x	x		x			A	1 -Minor	-	-			

Description of Source of Impact

Seabed disturbance associated with the Petroleum Activities Program can occur during operations from activities such as, but not limited to:

- physical presence of the subsea infrastructure
- scour, spans, and flowline movement inherent in design
- subsea IMMR activities (Section 3.8).

Specifically, the presence of subsea infrastructure may result in localised scouring around the infrastructure due to currents, subsurface waves, and seabed sediment fluid dynamics. Operational experience indicates scour around subsea infrastructure associated with the Petroleum Activities Program is localised with negligible impact to environmental receptors. Scour around subsea infrastructure may necessitate IMMR activities as part of integrity management practices.

Flowline movement may occur as per design and within integrity margins along the flowline corridor. Normal flowline operational movement occurs due to factors such as flowline buckling, walking and varying metocean conditions. Lateral movement can occur within the flowline corridor. Management of flowline buckling and walking may necessitate IMMR activities.

In order to maintain the integrity of subsea infrastructure, Woodside may be required to undertake routine subsea IMMR activities, as described in Section 3.8. Activities that constitute IMMR may impact upon the benthic environment in the vicinity of the activity. IMMR activities identified as impacting the benthic environment include (but are not limited to):

- inspections – minor, localised sediment resuspension by ROV / AUV
- scale and marine growth removal – minor, localised resuspension of sediment; removal of marine biota from subsea infrastructure
- sediment relocation – minor, localised modification of benthic habitat and sediment resuspension

- span rectification, pipeline protection and stabilisation – minor, localised modification of benthic habitat within footprint of area subject to rectification / protection / stabilisation;
- flying lead and umbilical replacement – minor, localised modification of benthic habitat in the vicinity of the jumper / umbilical
- jumper, spool repair / replacement – minor, localised modification of benthic habitat in the vicinity of the spool.
- temporary laying of tools on seabed (e.g. seabed baskets) – minor, localised modification of benthic habitat in the vicinity of the basket

The area of seabed predicted to be impacted varies depending on the nature and scale of the IMMR activity. Span rectification activities are IMMR activities with the greatest potential to modify benthic habitats, due to the alteration of the existing soft sediment habitat to hard substrate. Woodside's operational experience on the NWS indicates these activities are typically restricted to relatively short (tens of metres) linear sections of pipeline, with areas of up to approximately 100 m^2 impacted.

Notably, the subsea infrastructure provides hard substrate habitat for benthic fauna along the seabed (e.g. pipelines, flowlines, manifolds etc.).

Impact Assessment

Benthic Habitats

Soft sediment benthic habitats are widely represented in the Operational Area and the NWS Province and Central Western Shelf Transition more broadly. Scour may result in localised impact to soft sediment benthic habitats, typically on the scales of metres to tens of metres. Subsequently, any impacts to benthos from scour around subsea infrastructure are expected to be localised, with no significant impacts to benthic habitats within the Operational Area.

As mentioned, flowline movement is limited to within design and integrity envelopes and may result in slight, localised impact to soft sediment benthic habitats, typically on the scales varying between metres to tens of metres laterally along the flowline corridors.

IMMR activities may result in potential impacts that may be categorised as:

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

A study of the benthic habitats along the pipeline route (BHP, 2011) confirmed the benthic habitat within the Operational Area is predominantly soft sediment with sparsely associated epifauna, and is broadly consistent with those represented throughout the NWS Province and Central Western Shelf Transition and wider NWMR (Section 4.5). Benthic communities of the soft sediment seabed are characterised by burrowing infauna such as polychaetes, with biota such as sessile filter feeders occurring on areas of hard substrate (such as subsea infrastructure). The infauna communities are also representative of the NWS province; being of low abundance and dominated by polychaetes and crustaceans (RPS Environment and Planning 2012).

Direct seabed disturbance, including permanent modification of benthic communities, may result as a consequence of IMMR activities such as span rectification, pipeline protection and stabilisation. These activities will typically disturb a small area (typically < 100 m^2) of soft sediment habitat, which is broadly represented in the Operational Area and wider NWS region. This habitat will be replaced by hard substrate (e.g. concrete mattresses, rocks etc.) which is generally uncommon in the middle and outer NWS region. Over time, this hard substrate is expected to be colonised by sessile benthic biota (e.g. sponges, gorgonians etc.), which may support higher biodiversity benthic fauna than soft sediment habitats. The estimated overall extent of such direct seabed disturbance is extremely small in relation to the extent of the soft sediment habitats which are broadly represented within the Operational Area and the wider NWS province.

KEFs

Ancient Coastline at 125 m depth contour: The Operational Area overlaps approximately 12.98 km^2 of the 16,190 km^2 Ancient Coastline KEF, which is approximately 0.08% of the KEF. The Operational Area represents a buffer around subsea infrastructure to facilitate vessel operations; the potential for seabed disturbance is much more localised (i.e., within 10's of metres is the subsea infrastructure).

Benthic habitat surveys in the region (including within the Ancient Coastline at 125 m depth contour KEF) indicate that benthic habitats within the KEF are characterised by sand interspersed with areas of rubble and outcroppings of limestone pavement (AIMS 2014a, RPS 2011). Such habitats are widely distributed in the NWS Province. As noted in Appendix K Master Existing Environment, the geomorphic feature the KEF is associated with is represented worldwide and represents the coastline during a previous glacial period. Therefore, potential impacts to this regional-scale KEF are expected to be negligible.

The Ancient Coastline at 125 m depth contour is also associated with the ancient landscape on which there is potential for submerged cultural heritage (Section 4.9.1), this is discussed further below.

Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula: The Operational Area overlaps approximately 1.66 km^2 of the 5,392 km^2 canyons, which is approximately 0.03% of the KEF. The Operational Area represents a 500 m safety exclusion zone around each well and a 100 m buffer around subsea infrastructure to

facilitate vessel operations; the potential for seabed disturbance is much more localised (i.e., within 10's of metres is the subsea infrastructure).

The canyons are identified as a KEF for their unique seabed features which lead to enhanced productivity in the region. The Operational Area is located away from the canyon system, and localised changes to seabed are not expected to impact upon the regional-scale oceanographic processes occurring within the KEF. Therefore, potential impacts to this KEF are expected to be negligible.

Artificial Habitat: The presence of the Macedon subsea infrastructure provides hard substrate for the settlement of marine organisms; the availability of hard substrate is often a limiting factor in benthic communities. As such, the presence of the subsea infrastructure has led to the establishment of ecological communities which would not have existed in this area otherwise. For example, pipeline infrastructure has been shown to support more diverse fish assemblages and benthic biota (McLean et al. 2017); these communities are relatively diverse compared to the open water and soft sediment habitats in the broader Operational Area.

The provision of artificial habitat associated with the subsea infrastructure will subsequently have either no adverse environmental impact or a low level of positive environmental impact through increasing biological diversity.

Cultural Values and Heritage

Woodside has conducted consultation with Traditional Custodian groups as described in Appendix F . Consultation with Traditional Custodians has not identified any Aboriginal cultural features or heritage values specifically associated with the Macedon pipeline. However, consultation with the Western Australian Museum has identified an opportunity to undertake an assessment of the prospectivity for archaeological sites along the entire pipeline route, including the portion in Commonwealth waters (and within the Operational Area). Therefore, prior to any future seabed disturbing activities occurring, Woodside will undertake a desktop survey to understand the likelihood of cultural heritage features being present in that area.

Water and Sediment Quality: Seabed disturbance may include localised and temporary decline in water quality due to an increase in suspended sediment concentrations and sediment deposition caused by IMMR activities. However, sediment loads are not expected to be significant due to the relatively small footprint for each activity (IMMR activities described above, and in Section 3.8). Each discrete IMMR activity near the seabed is likely to cause a single brief disturbance resulting in a transient plume of suspended sediment.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[27]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
An ROV as-left survey is undertaken after relevant IMMR activities, to confirm all temporary equipment has been removed and to record location of any new subsea infrastructure that has been installed.	F: Yes CS: Minimal cost ROV as left survey is standard practice.	In accordance with OPGGS Act Section 572 (3) all temporary equipment is removed when no longer in use.	Legislative requirement. Must be adopted.	Yes C 3.1
Good Practice				
All IMMR activities are restricted to within the Operational Area	F: Yes. CS: Minimal cost. Standard Practice.	By limiting the extent of IMMR activities, impacts to benthic habitats are reduced.	Benefits outweigh cost sacrifice.	Yes C 3.2
Professional Judgement – Eliminate				
Vessels used for routine IMMR will typically use dynamic positioning.	F: Yes. CS: Minimal. Subsea intervention vessels undertaking routine IMMR activities typically do not anchor.	By not anchoring, the potential impacts to benthic habitat are avoided.	Benefits outweigh cost sacrifice.	Yes C 3.3

[27] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[27]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Do not use ROV close to, or on, the seabed.	F: No. The use of ROVs (including work close to or occasionally landed on the seabed) is critical as the ROV is an integral part of IMMR activities. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
Monitoring and maintenance of subsea infrastructure to manage scour and flowline movement to within integrity envelope.	F: Yes, subsea inspection maintenance and integrity monitoring is undertaken which inherently controls extent of scour and flowline movement. CS: Minimal cost. Standard practice	Monitoring and maintenance of subsea infrastructure confirms benthic seabed disturbance is limited to design flowline corridor.	Control is per current Subsea Integrity Management Plan	Yes C 3.4
Monitoring of seabed surrounding subsea infrastructure.	F: Yes. ROV footage collected as part of subsea integrity surveys could be reviewed to observe and detect changed in benthic habitats. CS: Costs associated with the review of collected footage.	Limited environmental benefit (information) gained from monitoring benthic habitats.	Given the low sensitivity of the environment surrounding the subsea infrastructure, any environmental benefit gained is outweighed by costs associated with implementing control.	No
Review of existing survey data by a suitably qualified maritime archaeologist prior to future seabed disturbing activities to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options.	Review of data by suitably qualified maritime archaeologist will inform potential exclusion or avoidance areas for seabed disturbance. Implementing this process will protect and minimise any physical impacts to underwater cultural heritage. Additionally, this process is not inconsistent with the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters (DCCEEW, 2024).	Benefits outweigh cost/ sacrifice.	Yes C 4.1

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[27]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
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 8.6.	F: Yes. CS: Cost of implementation	Allows management of Unexpected Finds in accordance with legislative requirements, (including Underwater Cultural Heritage Guidance for Offshore Developments and the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters (DCCEEW, 2024) under the UCH Act, expert advice and community expectations.	Benefits outweigh cost/ sacrifice.	Yes C 4.2
Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, (Section8.6).	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefit outweighs cost/ sacrifice.	Yes C 4.3
Activities under the Petroleum Activities Program will be carried out in accordance with the protection declarations relevant to the Operational Area, in accordance with Sections 9,10,12 of the ATSIHP Act	F: Yes CS: Costs associated with the implementation	Implementation of the control so that any impacts to significant Aboriginal areas and significant Aboriginal objects protected by Ministerial declaration are acceptable under the standards of the ATSIHP Act.	Control based on legislative requirements – must be adopted.	Yes C 4.4
Project inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	F: Yes CS: Minimal	Workforce is suitably aware of cultural features and heritage values in the area they are operating.	Benefits outweigh cost/sacrifice.	Yes C 4.5
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts of seabed disturbance from subsea activities. As no reasonable additional / alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP, and demonstrate that the EPOs are met.				

Demonstration of Acceptability
Acceptability Statement: The impact assessment has determined that, given the adopted controls, seabed disturbance from subsea activities represents a slight short-term impact to the seabed. Further opportunities to reduce the impacts have been investigated above. The adopted controls are considered good oil-field practice/industry best practice. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of subsea activities to a level that is broadly acceptable.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 2 Seabed disturbance to be limited to planned activities and impacts described as part of the Petroleum Activities Program and to not occur outside the Operational Area.	C 3.1 An ROV survey is undertaken post maintenance or repair activity to confirm temporary equipment has been removed and to record location of new subsea infrastructure.	PS 3.1.1 Temporary equipment is removed.	MC 3.1.1 As left survey confirms temporary equipment is removed
		PS 3.1.2 Location of equipment, including those made redundant by the installation of a replacement, are recorded and updated in the inventory.	MC 3.1.2 Records confirm location of replacement equipment and remaining redundant equipment.
	C 3.2 All IMMR activities are restricted to within the designated pipeline corridor.	PS 3.2 All IMMR activities will be carried out within the Operational Area.	MC 3.2.1 Records demonstrate all IMMR activities occur only within the Operational Area.
	C 3.3 All vessels used for routine IMMR activities will typically use dynamic positioning.	PS 3.3 All vessels used for routine IMMR activities will typically use dynamic positioning.	MC 3.3.1 Records demonstrate dynamic positioning used during routine IMMR activities
	C 3.4 Monitoring and maintenance of subsea infrastructure to manage equipment integrity, scour and flowline movement within integrity envelope.	PS 3.4 Implementation of the Subsea Facilities and Pipeline Integrity Management Plan.	MC 3.4.1 Records demonstrate compliance with Subsea Facilities and Pipeline Integrity Management Plan.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 3 No adverse impact to unexpected finds of Underwater Cultural Heritage[28] without a permit[29].	C 4.1 Review of existing survey data by a suitably qualified maritime archaeologist prior to future seabed disturbing activities in areas where the seabed is less than 130 m, to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	PS 4.1 Existing survey data reviewed by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment.	MC 4.1 Records demonstrate review of existing survey data completed prior to commencement of seabed disturbing activities.
	C 4.2 Unexpected finds of potential Underwater Cultural Heritage[30] sites/features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in Section 8.6.	PS 4.2.1 In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in Section 8.6.	MC 4.2.1 No non-compliance with the Unexpected Finds Procedure.
	C 4.3 Relevant IMMR vessel crew, and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (Section 8.6.)	PS 4.3.1 Relevant IMMR vessel crew and ROV operators are made aware of the requirements of the Unexpected Finds Procedure (Section 8.6) through an induction.	MC 4.3.1 Records demonstrate IMMR vessel crew and ROV operators are made aware of potential to encounter UCH.

28 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

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

30 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.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 4.4 Report any potential UCH finds to relevant persons and authorities in accordance with the Unexpected Finds Procedure (Section 8.6)	PS 4.4.1 Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (Section 8.6) including to: • WA Museum as requested during EP consultation • Australasian Underwater Cultural Heritage Database via DCCEEW.	MC 4.4.1 Records of potential UCH finds reported to relevant authorities and relevant persons in accordance with the Unexpected Finds Procedure (Section 8.6)
	C 4.5 Inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	PS 4.5.1 All relevant marine crew have completed inductions that include information on cultural values, including tangible and intangible cultural heritage for awareness	MC 4.5.1 Records demonstrate all relevant marine crew have completed inductions that include cultural material

6.6.3 Routine Acoustic Emissions: Generation of Noise

Context	
Field layout and description – Section 3.6 Subsea Support Vessels – Section 3.9 Subsea Inspection, Monitoring, Maintenance and Repair Activities – Section 3.8	Protected Species – Section 4.6

Impacts and Risks Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Noise generated within the Operational Area from: • operation of subsea infrastructure • IMMR activities, including an IMMR vessel						x		A	1 -Minor	-	-	LCS	Tolerable	EPO 4 EPO 5

Description of Source of Impact

IMMR activities and the operation of subsea wells and infrastructure will generate noise both in the air and underwater. Typical noise sources and their estimated sound pressure levels for the petroleum activities program are provided in Table 6-3.

Table 6-3: Indicative source characteristics of underwater noise associated with the Petroleum Activities Program

Acoustic Noise Sources	Estimated Sound Pressure Level (dB re 1 µPA rms SPL)	Frequency Range kHz
Vessels (continuous)		
One IMMR vessel operating on DP	187.6[1]	Broadband
Wellhead, Flowlines and Subsea Infrastructure (continuous)[2]		
Wellhead operations	113	Broadband
Subsea infrastructure (e.g. choke valve)	155	Broadband
IMMR Activity Noise (Impulsive)		
Multibeam Echo Sounder	210 – 245[3]	75 - 900
Side Scan Sonar	200 – 235[3]	75 - 900
Positioning Transponders	180 – 206[2]	21-31

1. a single representative IMMR vessel (Fugro Etive) of a source level of 187.6 dB re 1 µPA rms – Jasco Applied Sciences, 2024

2. Jasco Applied Sciences, 2010

3.Jimenez-Arranz et al., 2020

IMMR Vessel

IMMR activities will be undertaken using one IMMR vessel with DP thrusters to allow manoeuvrability and avoid anchoring when undertaking works near subsea infrastructure. IMMR vessels holding station (e.g., using DP systems; relying on thrusters and main propellers) are considered to be the main source of underwater noise generated during the Petroleum Activities Program. Noise generated from these activities is for discrete work packages and therefore will be infrequent and of short duration (up to two weeks per year).

These noises contribute to and can exceed ambient noise levels, which range from around 90 dB re 1 µPa (root square mean sound pressure level [rms SPL]) under very calm, low wind conditions, to 120 dB re 1µPa (rms SPL) under windy conditions (McCauley, 2005).

The IMMR vessel utilised would be similar to the *Fugro Etive*. The *Fugro Etive* has dimensions 92.95 m length, 19.7 m width and 6.6 m draft. Woodside provided acoustic source parameters and source levels for vessels of this size and thruster capacity under specific conditions, which were derived from semi-analytical methods, to JASCO for source level estimation. From these analyses, parameters for the Etive were selected and a source level of 187.6 dB re 1 µPa derived (JASCO, 2024b).

IMMR Activities

MBES and SSS are low-energy, high-resolution geophysical survey instruments that may be required for IMMR every 1-5 years to identify buckling, movement, scour and seabed features. MBES and SSS generate micro-pulses of high frequency sound in a highly focused beam directed towards the seabed, which attenuates rapidly underwater compared to lower frequency sound sources. Due to this directionality and short pulse duration, there is relatively low sound energy and very limited horizontal sound propagation. Additionally, sound sources generated closer to the seabed have a lower received noise level in the horizontal direction due to seafloor scattering and absorption. Sound pressure levels (SPL) for MBES typically range from 210 to 245 dB re 1 µPa @ 1 m, and SSS typically range from 200–235 dB re 1µPa SPL (Jimenez-Arranz et al., 2020). The frequencies range from about 75 to 900 kHz (Jimenez Arranz et al., 2020).

Positioning Equipment

An array of long baseline (LBL) and/or ultra-short baseline (USBL) transponders may be used for positioning during IMMR activities. Transponders typically emit pulses (impulsive noise) of medium frequency sound, generally within the range 21 to 31 kHz. The estimated SPL would be 180 to 206 dB re 1 µPa at 1 m (Jiménez-Arranz et al., 2020). 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 when required for precise positioning they will emit one chirp every five seconds.

Wellhead, Pipelines and Subsea infrastructure

Woodside has undertaken acoustic measurements on the noise generated by the operation of choke valves associated with the Angel facility (JASCO, 2015) similar to the design employed across Macedon subsea valves. These measurements indicated choke valve noise is continuous, and the frequency and intensity of noise emitted is dependent on the rate of production from the well. Noise intensity at low production rates (16% and 30% choke positions) were approximately 154-155 dB re 1 µPa, with higher production rates (85% and 74% choke positions) resulting in lower noise levels (141-144 dB re 1 µPa). Noise from choke valve operation was broadband in nature, with the majority of noise energy concentrated above 1 kHz. Depending on rates of flow, source levels have been reported to vary between 165 dB re 1 µPa2m2 and 130 dB re 1 µPa2m2. Additionally, the EIS documentation for Woodside’s projects across the North West Shelf report a broadband source level of 161.5 dB re 1 µPa2m2 for noise from wellheads as per Proposed Browse to North West Shelf Project 2022 (Woodside, 2022b).

Impact Assessment

Receptors

The Operational Area is located in water depths of approximately 60 m (at inshore Commonwealth waters boundary of trunkline) to 180 m deep (well sites). The fauna associated with this area is predominantly pelagic species of fish, with migratory species such as turtles, whale sharks and cetaceans potentially present in the area associated with BIAs and other seasonal activities. Noise interference is a key threat to a number of migratory and threatened cetaceans and marine turtles identified as occurring within the Operational Area (Section 4.6).

The Operational Area overlaps flatback turtles (internesting buffer), green turtle (internesting buffer), hawksbill turtle (internesting buffer), loggerhead turtle (internesting buffer), whale sharks (foraging), wedge-tailed shearwaters (breeding) and humpback whale (migration) BIAs. The Operational Area also overlaps habitat critical for the survival of the species for green turtle, flatback turtle and hawksbill turtle. There are no turtle nesting locations within the Operational Area, as the Operational Area is entirely located offshore.

Whale sharks are most likely to be present between March and November and wedge-tailed shearwaters between August and April. Due to the lack of roosting or nesting habitat for wedge-tailed shearwaters in proximity to the Operational Area, only a low density is expected even during peak nesting periods.

Humpback whales may be present in the Operational Area during the northbound and southbound migrations, with satellite tracks indicating that individuals are more likely during the northbound migration.

There may also be demersal fish within the Operational Area associated with the existing Macedon subsea infrastructure, such as pipelines (McLean et al. 2017).

There are also a number of BIAs outside the Operational Area but within the EMBA as listed in Section 4 of this EP. The following paragraphs also take these BIAs into consideration when assessing the potential impacts of acoustic emissions on the marine environment.

Potential Impacts of Noise

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

- by causing direct physical effects on hearing or other organs. Hearing loss may be temporary (temporary threshold shift (TTS) referred to as auditory fatigue), or permanent (permanent threshold shift [PTS]);
- by masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey); and
- 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.

Sound Propagation

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

Cetaceans

Species Sensitivity and Thresholds

Marine mammals and especially cetaceans rely on sound for important life functions including individual recognition, socialising, detecting predators and prey, navigation and reproduction (Weilgart. 2007; Erbe et al. 2015; Erbe et al. 2018). Underwater noise can affect marine mammals in various ways including interfering with communication (masking), behavioural changes, a shift in the hearing threshold (PTS and TTS), physical damage and stress (Erbe, 2012; Rolland et al. 2012).

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

The thresholds that could result in behavioural response, TTS and PTS for cetaceans as a result of impulsive and continuous noise sources are presented in Table 6-4. These thresholds have been adopted by the United States National Oceanic and Atmospheric Administration (NOAA) (National Marine Fisheries Service [NMFS], 2014, 2018; Southall et al. 2019 NOAA, 2019).

Table 6-4: PTS, TTS and behavioural response onset thresholds for low-frequency (LF) and high-frequency (HF) cetaceans

Hearing group	PTS onset thresholds SEL_{24h} (dB re 1µPa^2.s)		TTS onset thresholds SEL_{24h} (dB re 1µPa^2.s)		Behavioural response (dB re 1µPa)	
	Impulsive	***Continuous***	***Impulsive***	***Continuous***	***Impulsive***	***Continuous***
LF cetaceans	183 dB re 1 µPa2 s (SEL weighted) 219 dB re 1 µPa (peak SPL)	199 dB re 1 µPa2 s (SEL weighted)	168 dB re 1 µPa2 s (SEL weighted) 213 dB re 1 µPa (peak SPL)	179 dB re 1 µPa2 s (SEL weighted)	160 dB re 1 µPa (SPL)	120 dB re 1 µPa (SPL)
HF cetaceans	185 dB re 1 µPa2 s (SEL weighted) 230 dB re 1 µPa (peak SPL)	198 dB re 1 µPa2 s (SEL weighted)	170 dB re 1 µPa2 s (SEL weighted) 224 dB re 1 µPa (peak SPL)	178 dB re 1 µPa2 s (SEL weighted)		

Source: NMFS (2014, 2018); Southall et al. (2019); NOAA (2019). SEL24h expressed as dB re 1 µPa².s; Peak pressure (PK) and SPL expressed as dB re 1 µPa.

Impact Assessment

Sound propagation modelling was undertaken for the 2022 Woodside Pluto Drilling Campaign (JASCO, 2022) which included noise sources from a drilling program at XNA02 well site This is considered a suitable analogue for assessing noise impacts from an IMMR vessel at the Macedon location due to the similarity of water depth (160-180m) and source levels. The noise scenario of a MODU under DP, Drilling + OSV on standby at XNA02 location is considered a suitable surrogate for an IMMR vessel at Macedon as the cumulative noise level used for the modelling (187.7 dB) is slightly higher than for a representative IMMR vessel (187.6 dB) and thus conservative.

The modelling indicates the PTS and TTS thresholds for low frequency (LF) cetaceans may occur within approximately 2.17km for an IMMR vessel. The PTS and TTS thresholds are frequency-weighted cumulative sound exposure levels over a complete 24 hour period, which assumes that the animal receiving the sound is constantly within the sound field over 24 hours.

The modelling indicates that the behavioural response threshold for low frequency (LF) cetaceans may occur within approximately 17.2 km of an IMMR vessel operating on DP while undertaking inspection or maintenance of infrastructure (Figure 6-1**)**

During operations there will also be continuous noise generated by choke valves on wellheads within the Macedon field. These will generate noise throughout the Petroleum Activities Program. These are expected to generate noise well within the extent of noise emissions that have been modelled for an IMMR vessel.

JASCO Applied Sciences (JASCO) performed a modelling study of underwater sound levels associated with noise from Woodside's seabed wells along the North West Shelf about 25-40 km off the North West Cape, directly adjacent to the Macedon Operational Area (JASCO, 2024a). A broadband source level of 161.5 dB re 1 µPa2m2 for noise from wellheads was utilised based on the Proposed Browse to North West Shelf Project 2022 (Woodside, 2022b)

The wellhead noise was modelled at two locations: one at site of Ngujima-Yin FPSO (15km from Macedon) in water depth of 316m, and at the Pyrenees Venture location (4km from Macedon) in 196m water depth which is similar to the water depth of the Macedon wells (160-180m) and so a suitable analogue.

For either location, the maximum distances from the noise source to where the marine mammal behavioural response criterion of 120 dB re 1 µPa was not exceeded was predicted to be less than 200 m. The noise is not predicted to ensonify the entire water column at or above 120 dB re 1 µPa, reaching up to a minimum distance below the water surface of approximately 70m.

For TTS in low-frequency cetaceans the maximum distance from the noise sources to where the noise effect criterion of accumulated SEL24h was not exceeded, was predicted to be on order of 20-30 m. For PTS, the maximum distances for accumulated SEL24h criteria from Southall et al. (2019) is not likely to be exceeded.

Each wellhead is over approximately 1.5 km from each other wellhead and given the noise remains at under 70m water depth and only extends out 200m, any potential for cumulative impact is unlikely.

The Operational Area for the Petroleum Activities Program intersects the humpback whale migration BIA. There are no other cetacean BIAs within the area where noise levels above TTS and PTS thresholds could be expected. Potential impacts to migrating humpback whales are expected to be minor given the small area of the BIA that could have noise levels about TTS and PTS thresholds, the short duration and infrequent nature of IMMR activities and the tendency for cetaceans to display avoidance behaviour prior to encountering noise levels above threshold levels. Further, the modelling assumes that the cetacean would be exposed to the noise level for 24 hours which is unrealistic for a migrating humpback whale which would most likely only be transiting through the area.

Behavioural thresholds could be exceeded up to 17.2 km from the noise source, this footprint overlaps the pygmy blue whale migration BIA to a minor extent, which is approximately 14.9 km from the nearest infrastructure location (Figure 6-1). If the noise extent exceeding behavioural thresholds overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route, but will continue on their migration.

The Conservation Management Plan for the blue whale (Commonwealth of Australia, 2015a) and associated guidance on key terms within the Blue Whale Conservation Management Plan (DAWE, 2021) requires that pygmy blue whales not be displaced from a foraging area. The nearest recognised foraging BIA for pygmy blue whales is approximately 36.3 km from the Operational Area at the closest point and outside any impact threshold modelled (JASCO, 2022). JASCO modelling predicted that behavioural responses (a conservative surrogate for displacement) could occur up to 17.2 km from the noise source, therefore noise effect thresholds are not expected to be reached within the pygmy blue whale foraging BIA.

The National Recovery Plan for the southern right whale (DCCEEW, 2024) also identified anthropogenic noise as a threat, and requires that 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, and should demonstrate that the risk of behavioural disturbance is minimised.

The maximum extent of noise exceeding the behavioural threshold extends to within 500 m of the southern right whale (reproduction and migration) BIA and habitat critical to its survival which are 17.7 km from the nearest Macedon infrastructure at the closest point where IMMR vessels would be working on DP (Figure 6 1). Given the size of the BIA

and the conservative nature of underwater noise modelling, and the infrequent noise emissions from a single vessel, for a limited duration (up to 2 weeks per year) it is expected that the southern right whale would not be impacted by the noise emissions from Macedon.

In addition, the maximum extent of noise above behavioural thresholds does not overlap the humpback whale resting BIA which is over 23km from the Macedon Operational Area and no impacts would be expected.

The Operational Area and surrounding waters are characterised as open water with no restrictions (e.g., shallow waters, embayments) to an animal's ability to avoid the activities. Behavioural response by LF cetaceans (such as pygmy blue whales and the southern right whale) may result in a deviation in course, which is expected to be insignificant in the context of the long distances over which individuals migrate (thousands of kilometres). Cetaceans that are frequently exposed to sounds such as vessel noise may also habituate and adapt to this noise (Richardson et al. 1995; NRCC, 2003). This may be the case for the humpback whale population that regularly passes through areas of significant shipping traffic during their migrations.

Impulsive noise sources used during IMMR activities will be used infrequently, once per year for up to two weeks. Transponders used for positioning have the potential to cause some temporary behavioural disturbance to cetaceans; however, noise levels will be well below injury thresholds. Based on empirical spreading loss estimates measured by Warner and McCrodan (2011), received levels from USBL transponders are expected to exceed the cetacean behavioural response threshold for impulsive sources out to about 42 m. Given the short-duration chirps and the mid-frequencies used by positioning equipment, the acoustic noise from a single transponder is unlikely to have any substantial effect on the behavioural patterns of migrating cetaceans. Therefore, potential impacts from transponder noise are likely to be restricted to temporary and localised avoidance behaviour of individuals transiting through the Operational Area and therefore considered minor.

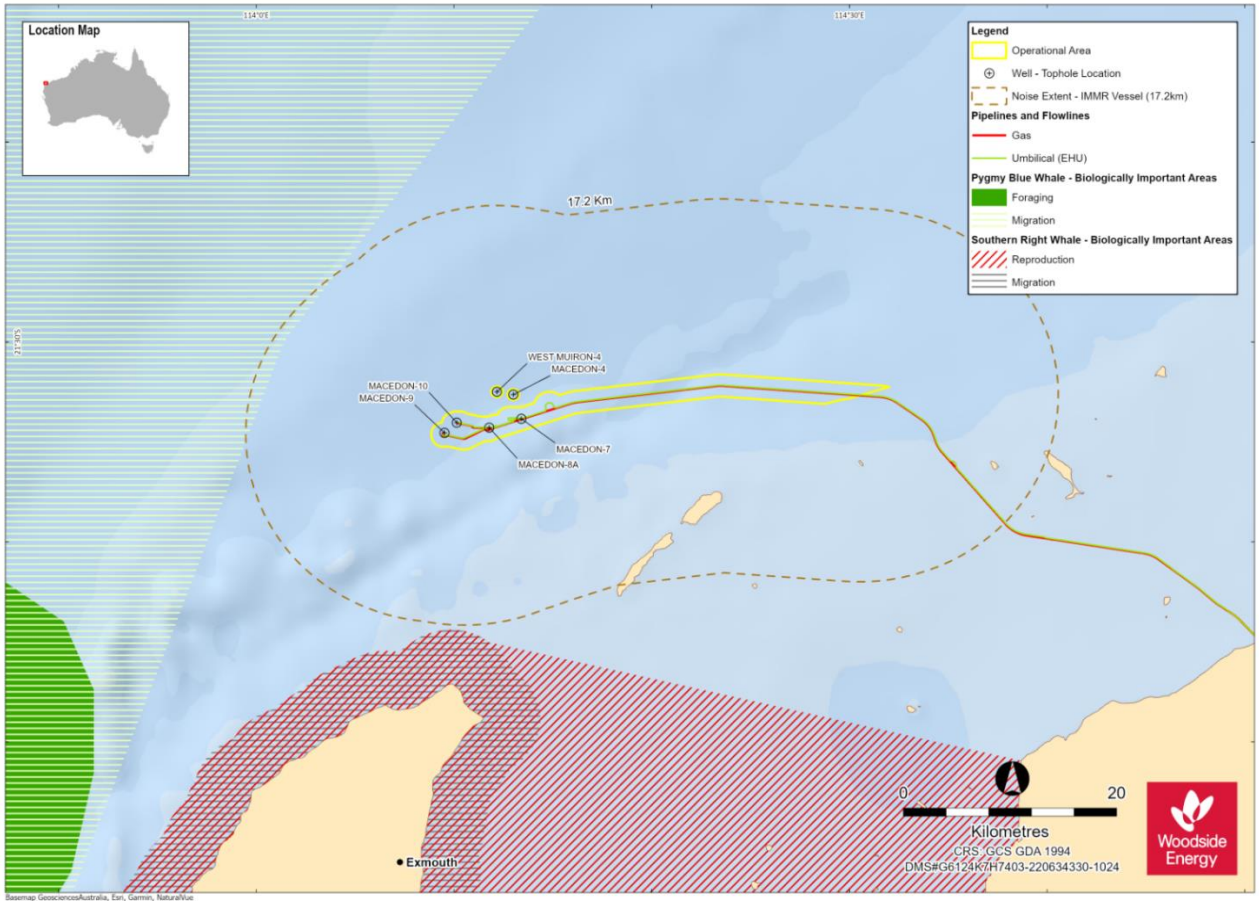

Figure 6-1 Indicative area that could be affected by noise above 120 dB re 1 uPA from an IMMR vessel operating with DP at any Macedon infrastructure. The area is estimated based on modelling from a drilling campaign in similar water depths and source levels (JASCO, 2022).

Marine Turtles

Species Sensitivity and Exposure Thresholds

There is a paucity of data regarding responses of marine turtles to underwater noise. However, turtles have been shown to respond to low frequency sound, with indications that they have the highest hearing sensitivity in the frequency range 100–700 Hz (Bartol and Musick. 2003). Lenhardt (1994) observed marine turtles avoiding low-frequency sound.

Popper et al. (2014) assessed thresholds for marine turtles and found qualitative results that TTS was only moderate for near field exposure, and low for both intermediate and far field exposure. McCauley et al. (2000) noted that sea turtles exhibit increased swimming activity at 166 dB re 1 µPa. No numerical thresholds have been developed for impacts of continuous sources (e.g., vessel noise) on marine turtles. The thresholds listed in Table 6-5 are considered appropriate for the assessment of impacts from continuous and impulsive acoustic discharges to marine turtles from the Petroleum Activities Program.

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

Hearing group	***Impulsive***			***Continuous***		
	PTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)	***TTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)***	***Behavioural response (dB re 1 µPa)***	***PTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)***	***TTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)***	***Behavioural response (dB re 1 µPa)***
Marine turtles	204	189	166* 175+	220	200	(N) High (I) Moderate (F) Low#

*Source: PTS and TTS thresholds (Finneran et al., 2017), * behavioural response threshold (impulsive) (NSF 2011), + behavioural disturbance threshold (impulsive) (McCauley et al., 2000), # behavioural response threshold (continuous) (Popper et al., 2014).*

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

Impact Assessment

The Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017) notes there is limited information available on the impact of noise on marine turtles and that the impact of noise on turtle stocks may vary depending on whether exposure is short (acute) or long-term (chronic). However, given the thresholds outlined in Table 6-5, it is reasonable to expect that marine turtles within the Operational Area, and in close proximity to noise sources may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activities Program.

Finneran et al., (2017) concludes that when exposed to continuous noise levels turtles will suffer temporary threshold shift and eventually permanent threshold shift at cumulative (over 24hrs) sound exposure level greater than 200 dB re 1 µPa2.s. Given the source level for continuous noise sources within the Operational Area is a maximum of 185 dB re 1 µPa at 1m noise levels are not expected to be at 200 -220 dB re 1 µPa2.s. and therefore are unlikely to cause PTS or TTS.

Sea turtles have been recorded as demonstrating a startle response to sudden noises, including impulsive sources (Lenhardt, et al., 1983). However, few studies have investigated the threshold level necessary for behavioural effects. Early work by O'Hara and Wilcox (1990) reviewed the use of noise as acoustic deterrents. They found that airguns with a source level of approximately 220 dB re 1 µPa at 1m (measured in the 25 to 1,000 Hz range) were effective as a deterrent for a distance of about 30 m. Moein et al. (1994) also used airguns to investigate means to repel loggerhead turtles. Avoidance was observed at 175 dB re 1 µPa at 1m exposure. McCauley et al. (2000) found behavioural avoidance at 155 to 164 dB re 1 µPa2.s. Impulsive noise levels within the Operational Area are expected to be within impact thresholds.

Although the Operational Area overlaps internesting BIAs and habitat critical (also associated with internesting behaviours) for a number of marine turtle species, the water depths of the Operational Area and the distance from shore mean that it is unlikely that internesting females would be present within the Operational Area. Any turtles that interact with the noise EMBA are likely to be at an individual level and would be expected to display temporary avoidance behaviours, preventing TTS or PTS. Turtles are also likely to be close to the surface and away from the continuous noise associated with choke valves, limiting the noise sources that could potentially cause avoidance behaviours to during IMMR activities which are only planned to occur for up to two weeks per year.

Fish

Species Sensitivity and Exposure Thresholds

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 (sharks and rays) and scombrid fish (mackerel and tunas)) or have a much-reduced swim bladder (e.g., flat fish) tend to have a relatively low auditory sensitivity. Considering these differences in fish physiology, Popper et al. (2014) developed sound exposure guidelines for fish; which are presented in Table 6-6 and Table 6-7 and are considered appropriate to assess continuous acoustic discharges to fish from the petroleum activities program.

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

Hearing Group	Continuous[1]				
	Mortality and potential mortal injury	***Recoverable injury***	***TTS***	***Masking***	***Behavioural***
Fish: no swim bladder	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) Moderate (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder not involved in hearing	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) Moderate (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder involving hearing	(N) Low (I) Low (F) Low	170 dB rms SPL for 48-hours	158 dB rms SPL for 12-hours	(N) High (I) Moderate (F) Low	(N) High (I) Moderate (F) Low

Sound pressure level dB re 1 µPa

Relative risk (high, moderate, or low) is given for animals at three distance from the source defined in relative terms as near (N), intermediate (I) and far (F). Source: Popper et al. (2014)

Table 6-7: Impact thresholds for fish, sharks and rays for impulsive noise

Hearing Group	Impulsive				
	Mortality and potential mortal injury	***Recoverable injury***	***TTS***	***Masking***	***Behavioural***
Fish: no swim bladder	>219 dB SEL24 h or >213 dB PK	>216 dB SEL24 h or >213 dB PK	>186 dB SEL24 h	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish: swim bladder not involved in hearing	210 dB SEL24h or >207 dB PK	203 dB SEL24h or >207 dB PK	>186 dB SEL24 h	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish: swim bladder involving hearing	207 dB SEL24h or >207 dB PK	203 dB SEL24h or >207 dB PK	186 dB SEL24h	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate

Relative risk (high, moderate, low) is given for animals at three distances from the source defined in relative terms as near (N, tens of meters), intermediate (I, hundreds of meters), and far (F, thousands of meters).

Peak SPL dB re 1 µPa; SEL_{24} dB re 1 μPa^2s.

Impact Assessment

Potential masking and behavioural disturbance at near and intermediate range; likelihood of PTS or TTS is considered not to be credible given fish would move away from the source. Site attached fish (e.g. some species of demersal fish)

are not expected to be exposed to underwater noise above impact thresholds given water depths in the area where these fish may be more prevalent (i.e. the Ancient Coastline at 125 m KEF). Any demersal fish species associated with the Macedon pipeline will be tens to hundreds of meters from continuous noise generated on the sea surface from IMMR vessels. Similarly it is expected that any species that are site attached at the subsea infrastructure would be established beyond any zones of potential impact from the choke valves.

The Operational Area overlaps a whale shark foraging BIA, currently there are no quantitative sound exposure thresholds relevant to whale sharks. It is expected that the potential effects of noise on whale sharks will be the same as for other pelagic fish species, resulting in minor and temporary behavioural change such as avoidance.

Cumulative Impact Assessment

Woodside have considered the potential noise emitting activities that could overlap with the Petroleum Activities Program both temporally and spatially. This includes consideration of the proximity of Woodside's Ngujima-Yin, Pyrenees and Stybarrow operations, as well as Santos' Ningaloo Vision operations. Some of these (Ngujima-Yin, Pyrenees and Ningaloo Vision operations) involve continuous noise emissions from the associated FPSOs and subsea wells and temporary noise from facility and subsea support vessel activities. Further, there is an overlap between the Pyrenees Operational Area and the Macedon Operational Area in proximity to the Macedon-6 well, however, it is not expected that any more than one IMMR vessel would be present in the Macedon Operational Area with this vessel possibly be used to complete tasks required for both fields sequentially.

A modelling study to evaluate cumulative underwater acoustic emissions from concurrent activities occurring adjacent to Macedon in proximity to North West Cape was undertaken by JASCO Applied Sciences (JASCO, 2024b). The study considered underwater sound levels associated with operational activities to several species of marine fauna, including low-, high-, and very high-frequency cetaceans. This modelling study considered underwater noise emissions from five Woodside and neighbouring FPSO operational activities, including supporting vessel activities (with source levels) as follows:

• Woodside Ngujima-Yin (NY) FPSO (173.9 dB re 1 µPa)

• Santos Ningaloo Vision (NV) FPSO (173.9 dB re 1 µPa)

• Woodside Pyrenees Venture (PYR) FPSO (173.9 dB re 1 µPa)

• Offshore Support Vessel (OSV) – specifications analogous to the Siem Thiima (189 dB re 1 µPa)

• Inspection, Monitoring, Maintenance and Repair (IMMR) vessel – specifications analogous to the Fugro Etive (187.6 dB re 1 µPa

The results are shown in Figure 6-2, with maximum distance to the marine mammal behavioural response criterion of 120 dB re 1 µPa being 18.9 km from any of the five sites. For TTS, the maximum distance for accumulated SEL24h scenarios for low-frequency cetaceans was limited to 1.78 km.

The results show that the noise level is below the behavioural response threshold within 4km to the southeast of the Pyrenees Venture and so does not overlap the Macedon Operational Area. Based on this the dominant noise source for Macedon would be the use of an IMMR vessel (187 dB re 1 µPa) and the noise from Pyrenees Venture and the other modelled sites further to the north west would not be additive to this IMMR vessel noise or increase its potential extent of 17.2km to the south towards the North West Cape and Exmouth Gulf. Additionally, the FPSOs and vessel activities to the north west of Macedon at between 4km and 18km distant from the Macedon Operational Area would be the dominant noise sources for these sites as the noise extent from Macedon would have reduced well below the source level of 187.6 dB re 1 µPa before reaching them with the surrogate modelling indicating that the level would reduce to 130 dB re 1 µPa within 4km of Macedon in any direction (JASCO, 2022). At this much lower noise level than the FPSOs or vessels, the IMMR vessel source at Macedon would not be additive or extend the noise further than that from these modelled sites shown in Figure 6-2.

Based on this, the worst case extent of potential impacts from noise from Macedon activities of a 17.2km extent from infrastructure to reaching behavioural thresholds is not considered to increase when the potential cumulative effects of adjacent activities to the north east of three FPSOs and two vessels is taken into account. The potential noise impacts of these activities is assessed in isolation and cumulatively in their respective Environment Plans.

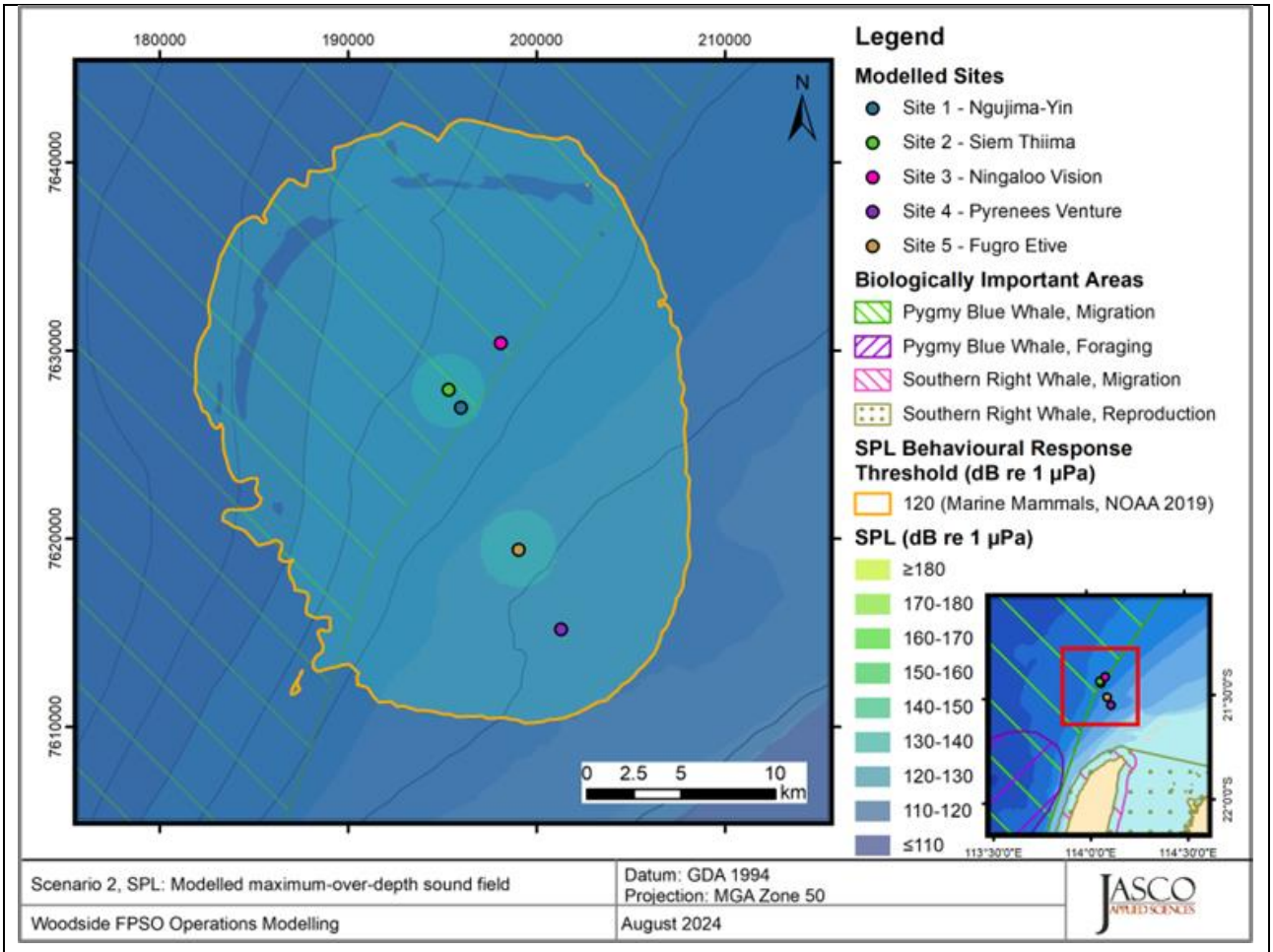

Figure 6-2 Woodside NWS FPSO operations cumulative modelling results summary

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[31]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Vessels operate in accordance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[32]:	F: Yes. CS: Minimal cost. Standard practice.	Implementation of these controls will reduce the exposure of a cetacean to noise from the vessel.	Controls based on legislative requirements – must be adopted.	Yes C 5.1

31 Qualitative measure
32 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.

• Vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone). • Vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.				
Good Practice				
Vary the timing of the Petroleum Activities Program to avoid migration periods.	F: No. The Petroleum Activities Program occurs continuously over a 5-year period, modifying the timing of the Petroleum Activities Program is not feasible. CS: Not considered, control not feasible.	Not considered, control not feasible.	Not considered, control not feasible.	No
Vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks can potentially reduce the underwater noise footprint of a vessel.	Benefits outweigh cost/sacrifice. Good practice.	Yes C 5.2
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 5.3
Implementing a shutdown zone around SSS and	F: Yes. However, as equipment is underwater, effective implementation of	Limited. The areas of disturbance for these devices are limited to	The source levels and frequency range of these devices are outside the	No

MBES for the following fauna: • whales • marine turtles • whale sharks.	zones is challenging from topside observation. CS: Moderate. Requires the provision of a dedicated suitably trained crew member to undertake Marine Fauna Observations.	within about 290 m of the source. In addition, it is noted that for MBES, the frequency range of these devices are outside the estimated frequency hearing range of identified protected species (whales, turtles and whale sharks).	estimated frequency hearing range of identified protected species (whales, turtles and whale sharks), so costs are considered disproportionate to benefits.	
Have a dedicated experienced and trained Marine Fauna Observer (MFO) onboard vessels to undertake marine fauna observations.	F: Yes, however additional cost for dedicated and experienced MFO to be present during IMMR. CS: Moderate, requires the provision of a dedicated experienced MFO to undertake Marine Fauna Observations.	Use of an MFO may detect fauna in the area, however control provides limited benefit when managing impacts associated with vessel noise alone.	Given limited benefit associated with the management of vessel noise impacts and costs associated with control implementation an experienced MFO is not considered necessary.	No
Professional Judgement – Eliminate				
Eliminate the use of DP on vessels during the Petroleum Activities Program.	F: No. Subsea intervention vessels are required to reliably hold station during the Petroleum Activities Program. Failure to do so may lead to loss of separation between vessels and infrastructure. This would result in unacceptable safety and environmental risk. CS: Not considered, control not feasible.	Not considered, control not feasible.	Not considered, control not feasible.	No
Avoid where practicable, planned IMMR vessel activities, during peak Southern Right Whale (SRW) Resting and Calving in Exmouth Gulf (July & August).	F: Yes CS: Increased cost for logistics and potential restriction of vessel availability. Also potential to increase safety risk due to non-ideal weather condition period being reduced (typically best weather conditions for field activities are June/July). Not reasonably practicable for some unplanned IMMR	Planning to avoid underwater noise emissions within close proximity of the SRW resting and calving during peak period where practicable, minimises potential for behavioural responses during these periods.	Implementing this control does not result in a predicted reduction of impacts, as the underwater noise emissions are not predicted to extend into the BIA. The noise extent is adjacent to the BIA however the modelling is conservative and any potential impact is infrequent and of limited duration (up to 2 weeks per year).	No

	activities such as repair if required.		Control is grossly disproportionate to the benefit gained.	
Avoid where practicable, planned IMMR vessel activities, during peak Pygmy Blue Whale migration (May-June & Nov-Dec).	F: Yes CS: Significant increased cost for logistics and restriction of vessel availability due to extensive period (4 months).	Planning to avoid where practicable, planned IMMR activities during peak PBW migration may result in underwater noise emissions not extending into the perimeter of the PBW migration BIA. However, given the size of the BIA, and the very small potential overlap with the BIA using conservative underwater noise modelling, and the infrequent noise emissions from a single vessel, for a limited duration (up to 2 weeks per year) it is expected that this would have a very limited impact, if any, on the migration behaviour of the PBW.	Implementing this control does not result in a significant reduction of impacts, and the cost sacrifice is disproportionate to the benefit gained.	No
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
Application of bubble curtains to reduce noise propagation.	F: No, Bubble curtain installation and operation in offshore open water not feasible due to technical operation constraints i.e., water depth/current.	Not considered, control not feasible.	Not considered, control not feasible.	No
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the impacts from routine acoustic emissions from wells, the pipeline and subsea infrastructure, subsea intervention vessels and IMMR activities to be ALARP. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts and risks are considered ALARP, and demonstrate that the EPO is met.				

Demonstration of Acceptability
Acceptability Statement: The impact assessment has determined that, in its current state, impacts from routine acoustic emissions from the Petroleum Activities Program represent a minor impact /disturbance to marine fauna within the Operational Area. Further opportunities to reduce the impacts and risks have been investigated above. The impacts are consistent with good oil-field practice/industry best practice and are considered to be broadly acceptable in its current state. Therefore, Woodside considers standard operations appropriate to manage the impacts of acoustic emissions to a level that is broadly acceptable.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 4 No injury of, or mortality to, EPBC Act 1999 listed marine fauna as a result of noise generated by the Petroleum Activities Program. EPO 5 No displacement of marine turtles or pygmy blue whales from habitat critical during nesting/breeding (including. internesting periods for turtles) and ensure biologically important behaviour can continue in biologically important areas.	C 5.1 Vessels operate in accordance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, which include the following measures[33:] • Vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone); • Vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding); • If the cetacean shows signs of being disturbed, activity support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots	PS 5.1 Vessels will comply with the EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans to reduce noise exposure.	MC 5.1.1 Records demonstrate no breaches with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and Woodside Marine Charterers Instructions.
	C 5.2 Vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	PS 5.2 When within 250 m of a whale shark vessels will not travel greater than 6 knots and vessels will not approach closer than 30 m to a whale shark	MC 5.2.1 Records demonstrate no breaches of speed requirements when within 250 m of a whale shark

[33] For safety reasons, the specified distances requirements are not applied for a vessel holding station or with limited manoeuvrability (e.g. loading, back-loading, close standby cover for overside working and emergency situations).

	C 5.3 Vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	PS 5.3 When within 300 m of a turtle, vessels will not travel greater than 6 knots.	MC 5.3.1 Records demonstrate no breaches of speed requirements when within 300 m of a turtle.

6.6.4 Routine and Non-routine Discharges: Discharge of Hydrocarbons and Chemicals During Subsea Operations and Activities

Context		
Field Layout and Description – Section 3.6 Subsea Support Vessels – Section 3.9 Subsea Inspection, Monitoring, Maintenance and Repair Activities – Section 3.8	Physical Environment – Section 4.4 Biological Environment – Section 4.5	Consultation –5

Impacts and Risks Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Discharge of subsea control fluids.		x	x		x			A	1 -Minor	-	-	GP	Tolerable	EPO 6
Discharges of chemicals and hydrocarbons from subsea intervention works.		x	x		x			A						
Discharge of chemicals remaining in subsea infrastructure and/or the use of chemicals for subsea IMMR activities.		x	x		x			A						

Description of Source of Impact

Hydrocarbons and chemicals may be discharged because of planned routine and non-routine operations and activities, as follows:

- Operational discharges, including, but not limited to:
  - discharge of subsea control fluids – subsea control fluid is used to control valves remotely from the facility. It is an open-loop system, designed to release control fluid from the control system during valve operations (e.g., up to 6 L per valve actuation).
  - potential non-routine hydraulic fluid discharge associated with umbilical system losses/weeps.
  - discharge of minor fugitive hydrocarbon from wells and subsea equipment (e.g., weeps/seeps/bubbles)

- discharge of chemicals introduced into subsea infrastructure and the production stream, either as process or non-process chemicals (e.g., corrosion inhibitors, biocides, scale inhibitors). Chemicals flow through the production process, with residual chemicals collected at the onshore gas plant.

- IMMR activities including but not limited to:
  - Discharge of residual hydrocarbons and control fluids in subsea lines and equipment and small gas releases associated with isolation testing and breaking containment.
  - discharge of residual chemicals in subsea lines and equipment, or the use of chemicals, during activities such as flushing. These chemicals are used and discharged intermittently in small volumes. Small quantities of chemicals may remain in the flushed infrastructure, which may be released to the environment after disconnection.
  - Discharge from subsea cleaning activities such as acid used for scale and marine growth removal, spool cleaning.
  - Potential non-routine hydrocarbon release associated with pigging operations losses/weeps
  - Potential hydrocarbons or other chemicals, depending on the equipment configuration and flushing ability during flowline or spools repair, replacement and recovery.

Impact Assessment

There is potential for localised water column pollution and adverse effects on marine biota as a result of planned routine and non-routine hydrocarbon and chemical discharges. However, planned discharges of hydrocarbons and chemicals are minor and are minimised as far as practicable via flushing of the lines back to the facility (when feasible). Discharge locations could be anywhere within the subsea infrastructure but most likely at the subsea valves (subsea control fluid) or at disconnection points in subsea infrastructure.

Water Quality

Subsea control fluids are discharged at relatively small volumes during valve actuations and IMMR activities at or near the seabed. On release the subsea control fluids are expected to mix rapidly and dilute in the water column. The small quantities of hydrocarbons (liquid and gas) that may be released during operational and IMMR activities (including pigging) that break containment of isolated subsea infrastructure will be buoyant and float upwards towards the surface. Given the water depth, pressure, and the small volumes released, these hydrocarbons are not expected to reach the sea surface. Rather, the release will disperse and dissolve within the water column. Chemicals may be discharged intermittently and in small volumes.

Small volumes of production hydrocarbons could be released if a spool or flowline replacement or repair is required. This would be up to 154 m^3 of dry gas which is expected to bubble to the surface and dissipate into the atmosphere. The small volumes of gas expected would not cause more than minor, temporary impacts to water quality.

There is potential for minor, temporary decrease in water quality at planned discharge locations, and locations where non-routine IMMR activities may occur (ie. along the flowline). Consequently there could be associated potential impacts on marine biota. Within the mixing zone impacts to pelagic fish are expected to be limited due to avoidance of the area of the discharge and minor, temporary decline in planktonic organisms in the immediate vicinity of any discharge plumes, including non-routine releases of hydrocarbons during replacement or repair of spools and/or flowline.

Sediment Quality

Accumulation of contaminants in sediments depends primarily on the volume/concentration of particulates in discharges or constituents that adsorb onto seawater particulates, the area over which those particulates could settle onto the seabed (dominated by current speeds and water depths), and the resuspension, bioturbation and microbial decay of those particulates in the water column and on the seabed. Valve actuation discharges are frequent but low in volume (up to 6 L). The subsea control fluid used in the open loop system (aqua glycol solution) is water-based and non-toxic and does not have a potential to bioaccumulate. Once released the control fluid is expected to mix rapidly in the water column and become diluted, accumulation in sediments is not considered likely.

In the event production hydrocarbons are released during a spool or flowline replacement hydrocarbons are expected to bubble to the surface and dissipate into the atmosphere, not having any impacts to marine sediments.

Given the low frequency and volumes of hydrocarbon releases and its buoyancy, accumulation in sediments is not considered likely.

Ecosystem / Habitats

Sediments in the Operational Area are expected to be broadly consistent with those in the NWS Province such as sparsely populated silty/sandy sediment habitats (as described in Section 4.5), with filter feeders such as sponges, ascidians, soft corals and gorgonians associated with areas of hard substrate. The only areas of hard substrate expected in the vicinity are artificial habitat associated with subsea infrastructure. Impacts to ecosystems are not

expected due to the localised nature of discharge plumes and potential for sediment quality impacts. Given the nature and scale of planned discharges, potential impacts are considered to be localised and negligible.

Values and Sensitivities

KEFs

The Operational Area overlaps with two KEFs: Ancient Coastline at 125 m Depth Contour, and Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula. No significant escarpments, species of conservation significance, emergent features or areas of high biological productivity characteristically associated with these KEFs have been observed in the Operational Area (Section 4.7). Therefore, potential impacts to this regional-scale KEF are expected to be negligible.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[34]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
None identified.				
Good Practice				
Implement Woodside's Chemical Selection and Assessment Environment Guideline	F: Yes. Routinely implemented to the chemical selection process for Woodside facilities. CS: Minimal cost. Standard practice.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Benefits outweigh cost/sacrifice.	Yes C 6.1
Subsea infrastructure flushed and appropriately isolated where practicable during IMMR disconnection activities.	F: Yes. The subsea infrastructure has been designed such that much of the hydrocarbon-containing elements can be flushed back to the onshore facility. CS: Minor. Flushing may prolong the cessation of production required for subsea IMMR activities, leading to reduced production.	Flushing and appropriate isolations reduce the volumes/concentration of hydrocarbons released to the environment.	Benefit outweighs cost sacrifice	Yes C 6.2
Implement facility isolation procedure so that proven isolation is in place for relevant IMMR activities.	F: Yes CS Minimal cost. Standard practice	Maintaining and testing the ability to isolate wells and pipelines will ensure barriers are in place and verified limiting the volume of hydrocarbon released	Control is already in place	Yes C 6.3

34 Qualitative measure

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[34]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Monitor subsea control fluid use and investigate material discrepancies to support identification of potential integrity failures.	F: Yes. The use of control fluid is monitored to maintain adequate fluid in the system. CS: Minimal cost.	Limits the volumes of subsea control fluid discharge to the marine environment	Benefit outweighs cost sacrifice	Yes C 6.4
Professional Judgement – Eliminate				
None identified.				
Professional Judgement – Substitute				
Install closed-loop subsea valve control system.	F: Yes. Closed-loop subsea valve control systems can be installed, however, they may not be able to be retro-fitted and may not perform as quickly / reliably as open-loop systems. CS: Significant. The design, procurement and retrofitting of a closed-loop valve control system would result in considerable offshore logistics, exposure to safety hazards during installation, and significant financial burden through direct costs and lost production.	The potential consequence of the discharges is ranked as incidental, based on the volume, frequency, location, and types of fluid discharged in an open-ocean environment, and avoiding the discharges would provide little or no environmental benefit.	When considering the negligible effect from the release of control fluids, the risk and costs of retrofitting a closed-loop subsea valve control system is considered to be grossly disproportionate to the environmental benefit.	No
Professional Judgement – Engineered Solution				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[34]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Route hydrocarbons to vessel during disconnection of subsea infrastructure.	F: Yes. However, to do so would introduce significant safety risks to the vessel crew (fire, explosion, asphyxiation). CS: Significant. Equipping and training crew onboard subsea intervention vessels to safely route hydrocarbons to the vessel would result in significant additional costs (in addition to the increased safety risk identified above).	Small environmental benefit from preventing low concentration hydrocarbon discharge.	Given the increased safety risk and the very low environmental impact from hydrocarbon releases during subsea IMMR activities, the cost of routing hydrocarbons to the vessel is grossly disproportionate to the environmental benefit	No
Decrease frequency of valve actuation.	F: Yes. Decreasing the frequency of valve actuations may extend the functionality and reliability of valves, potentially leading to improved operability. CS: Moderate cost due to potential constraints on operations.	The potential consequence of the discharges is ranked as incidental, based on the volume, frequency, location, and types of fluid discharged in an open-ocean environment, and reducing the number of discharges would provide little or no environmental benefit.	All valves are used as needed on the basis that they are designed for life of field. Decreasing the frequency of valve actuations could constrain operations which is grossly disproportionate to the environmental benefit.	No
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts of planned routine and non-routine hydrocarbon and chemical discharges. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP, and demonstrate that the EPO is met.				

Demonstration of Acceptability
Acceptability Statement: The impact assessment has determined that, given the adopted controls, planned routine and non-routine hydrocarbon and chemical discharges represents a localised impact that is unlikely to result in a lasting potential impact on water quality, marine sediment or ecosystem habitat. Further opportunities to reduce the impacts have been investigated above. Fluid discharges from the subsea system during operations and IMMR activities are routine in the oil and gas industry. The adopted controls are considered good oil-field practice/industry best practice. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of planned routine and non-routine hydrocarbon and chemical discharges to a level that is broadly acceptable.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 6 Impacts from routine and non-routine discharges from subsea operations and activities will be limited to planned activities and impacts described as part of the Petroleum Activities Program.	C 6.1 Implement Woodside's Chemical Selection and Assessment Environment Guideline	PS 6.1 All operational chemicals intended or likely to be discharged to the marine environment will be assessed and approved prior to use in accordance with the Chemical Selection and Assessment Environment Guideline) (described in Section 3.10) to ensure the impacts associated with use are ALARP and acceptable.	MC 6.1.1 Records demonstrate the chemical selection, assessment and approval process for operational chemicals is followed.
	C 6.2 Subsea infrastructure flushed and appropriately isolated where practicable during IMMR disconnection activities.	PS 6.2 Subsea infrastructure containing hydrocarbons flushed (where practicable) to a hydrocarbon concentration which provides considered diminishing returns prior to disconnection. Appropriate isolations applied where practicable.	MC 6.2.1 Records demonstrate subsea infrastructure flushing and isolations applied where practicable.
	C 6.3 Implement facility isolation procedure so that proven isolation is in place for relevant IMMR activities.	PS 6.3 Proven isolation in place in compliance with facility Isolation procedure.	MC 6.3.1 Records demonstrate that proven isolation in place as required.
	C 6.4 Monitor subsea control fluid use and investigate material discrepancies to support identification of potential integrity failures.	PS 6.4 Subsea control fluid use monitored and, where losses are unexplained, potential integrity issues are investigated.	MC 6.4.1 Records demonstrate subsea control fluid use is documented, and unexplained discrepancies investigated.

6.6.5 Routine and Non-routine Discharges: Discharge of Sewage, Putrescible Waste, Greywater, Bilge Water, Drain Water, Cooling Water and Brine

Context	
Subsea Support Vessels – Section 3.9	Physical Environment – Section 4.4 Biological Environment – Section 4.5

Impacts and Risks Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***							***Evaluation***							
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity		Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Marine discharges of liquid wastes from IMMR vessel utility systems and drains (sewage, greywater, RO brine reject, cooling water, food waste, rainfall / deck washdown water, firewater deluge testing).			x					A	1 -Minor	Cumulative 1 - Minor	-	-	LCS GP	Tolerable	EPO 7

Description of Source of Impact

Sewage, Putrescible Waste and Greywater

Vessels may discharge sewage, greywater and putrescible wastes. Sewage onboard vessels is routinely treated (either via sewage treatment plant (STP) or macerator) prior to discharge. Treatment systems may require routine maintenance or repair during operations, which may require infrequent, short periods in which sewage is directly discharged overboard as treatment systems are not always operational.

The volume of sewage and greywater expected to be generated on a subsea support vessel during IMMR activities is estimated to be in the order of 8 to 9 m^3 per vessel per day (based on an average volume of 75 L/person/day). The actual volume of discharge varies depending on personnel levels on the vessels.

Note that wastes may also be stored and transported to shore for disposal.

Drain and Bilge Water

Vessels routinely generate and discharge relatively small volumes of bilge water. Bilge tanks receive fluids from many parts of the vessel, including machinery spaces. Bilge water can contain water, oil, detergents, solvents, chemicals, particles and other liquids, solids or chemicals. Vessels may also discharge drainage water from decks directly overboard or via deck drainage systems; deck drainage may also contain traces of chemicals. Water sources could include rainfall events and/or from deck activities such as cleaning/wash-down of equipment/decks.

Cooling Water

Seawater is used on vessels as a heat exchange medium for the cooling of machinery engines. Seawater is drawn from the ocean and flows counter-current through closed-circuit heat exchangers, transferring heat from the vessel engines and machinery to the seawater. The seawater is then discharged to the ocean (i.e., it is a once-through system). Cooling water temperatures vary depending upon the vessel's engine workload and activity. Seawater used for cooling is dosed with sodium hypochlorite to inhibit marine growth to a target chlorine concentration of 0.5 ppm.

Brine

Brine generated from the water supply systems onboard vessels will be discharged to the ocean at a salinity of approximately 10% higher than seawater. The volume of the discharge is dependent on the requirement for fresh (or potable) water and would vary between vessels and the number of people onboard. Small quantities of anti-scaling and cleaning chemicals may also be discharged with the brine.

Impact Assessment

Water Quality

Sewage, Putrescible Waste and Greywater

The environmental impact associated with ocean disposal of sewage, greywater and 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.

No significant impacts from the planned discharges from IMMR vessels to the marine environment are anticipated due to the minor quantities involved, the expected localised mixing zone and the high level of dilution into the open water marine environment of the Operational Area.

Although the NWS Province is characterised as a low nutrient environment (DEWHA, 2008), studies of adjacent shelf water have found the area to be “a highly productive ecosystem in which nutrients and organic matter are rapidly recycled” (Furnas and Mitchell 1999). Occasional loading from sewage and putrescible waste from IMMR vessels is not significant in comparison to the daily turnover of nutrients in the area. Vessels are typically moving when in the Operational Area, which facilitates the mixing of sewage, putrescible wastes and greywater from vessels.

The impact of nutrients associated with discharge of sewage, greywater and putrescible waste is considered to have a localised impact with no lasting effect due to the small mass relative to daily turnover, and the assimilative capacity of the receiving environment.

Drain and Bilge Water

The impacts of drainage can include a decline in water quality and may be directly toxic to marine organisms, with impacts varying depending on volumes and type of contaminants.

Drain water from IMMR vessels may contain small quantities of hydrocarbons and other chemicals such as detergents. This means floating hydrocarbons are not routinely discharged to the environment via drains; any hydrocarbons discharged are primarily soluble fractions, with very low concentrations expected.

Impacts from drainage water from IMMR vessels are assessed as being highly localised and short-lasting. Bilge and deck drainage water from vessels is expected to mix rapidly in the marine environment upon discharge. Given the rapid mixing, relatively small typical bilge and deck drainage water, and expected low levels of potential contaminants, impacts from bilge and deck drainage water from vessels are assessed as short-lasting and highly localised.

Cooling Water

The impacts of cooling water can include a decline in water quality and may directly affect marine organisms due to temperature changes, with impacts varying depending on volumes, temperature, and type of contaminants. Temperature change from cooling water may affect open-water receptors (fish and plankton populations). Elevated seawater temperatures may cause a variety of effects on both fish and plankton, ranging from behavioural response (including attraction and avoidance behaviour) and minor stress from prolonged exposure. Fish are unlikely to be impacted by the elevated temperatures other than through behavioural changes (avoidance and attraction). While impacts to plankton may include mortality, with the rapid turnover of plankton communities and mixing of adjacent populations, populations are expected to recover rapidly once discharge ceases.

Discharged cooling water is typically warmer than the surrounding seawater, which typically ranges from 24.3 to 28.5 °C (average of 26.4 °C). Given this difference in temperature, discharged cooling water is relatively buoyant compared to the receiving seawater, and forms a plume in near-surface waters down current from the discharge location. As a surface plume, discharged cooling water is mixed by sea surface waves and wind.

Monitoring of water in the mixing zone around a Woodside production facility (GWA platform) indicates that water temperatures are consistent with background levels at the platform location (BMT Oceanica 2015), and sodium hypochlorite from cooling water systems is not measurable, so vessel discharges, which would be much smaller volumes than those monitored, are expected to have little effect in the marine environment.

Brine

Brine plumes may result in osmotic stress to marine biota that rely on gills or diffusion across cell membranes to maintain osmotic pressure within cells. Mobile fauna such as fish may move away from the brine plume; hence impacts will be restricted to planktonic and sessile organisms.

Once discharged into the marine environment, the brine plume sinks due to its relatively high density. Sinking of the plume facilitates turbulent mixing, as do currents and waves. Impacts from vessel RO brine discharge will have no lasting effects on the environment and are highly localised to the discharge location and only during IMMR activities.

Cumulative Impacts

There is little potential for cumulative impacts from routine discharges of sewage, putrescible waste, greywater, bilge water, drain water, cooling water and brine during the Petroleum Activities Program. This is due to the occasional

frequency and short timeframe of IMMR campaigns. The well-mixed receiving environment will also reduce impacts to no more than slight and short-term. No cumulative impacts from similar discharges from other nearby production facilities (e.g., Pyrenees FPSO) are expected.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[35]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Orders 91 (Oil) • Marine Orders 95 (Pollution prevention – Garbage) • Marine Orders 96 – (Pollution prevention – sewage)	F: Yes CS: Minimal cost. Standard practice.	Marine Orders required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class. Marine Orders 91, 95 and 96 (pollution prevention) reduces the potential impact of marine wastewater discharges on water quality.	Controls based on legislative requirements – must be adopted.	Yes C 7.1
Good Practice				
Implement Woodside's Chemical Selection and Assessment Environment Guideline.	F: Yes. Woodside routinely implements a chemical selection process, which is based on the OCNS. CS: Minimal. The OCNS is widely used throughout the industry and chemical suppliers are aware of the requirements of the scheme.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	The Woodside's chemical selection process is used to ensure chemicals are selected with the lowest practicable environmental risks while still providing the required technical capability.	Yes C 6.1
Professional Judgement – Eliminate				
Vessel decks re-designed to capture and treat all drainage.	F: No. Discharge from deck drainage is produced from rainfall events and is unavoidable. CS: Eliminating the discharge by collecting all contaminated run-off and storing it is not practicable due to the size/weight and	Not considered – control not feasible.	Not considered – control not feasible.	No

35 Qualitative measure

	complexity of the facilities required on the vessels. Transporting waste to shore is not a practicable option due to increased financial, logistical, and HES risks and impacts.			
Storage, transport and treatment / disposal onshore of sewage, greywater, putrescible and bilge wastes.	F: No. Transport of waste onshore would present additional safety and hygiene hazards resulting from the storage, loading and transport of the waste material CS: Not considered – control not feasible	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Substitute				
Transport of potable water from shore for IMMR vessels.	F: Yes. Potable water can be sourced from onshore water supplies. CS: Significant. The costs and operational complexity associated with potable water bunkering outweigh cost and negligible environmental footprint associated with offshore RO supply.	The potential environmental impact is ranked as having negligible effect; Eliminating RO brine the discharge would provide negligible environmental gain.	When considering the negligible impact from the discharge of RO brine reliance on bunkering of potable water and incremental support vessel activities is disproportionate to the environmental impact.	No
Professional Judgement – Engineered Solution				
None identified				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts of discharge of sewage, putrescible waste, greywater, bilge water, drain water, cooling water and brine. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP, and demonstrate that the EPO is met.				

Demonstration of Acceptability
Acceptability Statement: The impact assessment has determined that, given the adopted controls, impacts from the discharge of sewage, putrescible waste, greywater, bilge water, drain water, cooling water and brine represent localised short-term impacts, that together are unlikely to result in a potential impact greater than slight, short-term contamination above background levels outside a localised mixing zone. Further opportunities to reduce the impacts and risks have been investigated above. The adopted controls are considered good oil-field practice/industry best practice and meet legislative requirements under Marine Orders 91, 95 and 96. The potential impacts and risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of these discharges to a level that is broadly acceptable.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 7 Impacts from routine and non-routine discharges of liquid wastes will be limited to planned impacts and activities described as part of the Petroleum Activities Program.	C 7.1 Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Orders 91 (Oil) • Marine Orders 95 (Pollution prevention – Garbage) • Marine Orders 96 – (Pollution prevention – sewage).	PS 7.1 Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class.	MC 7.1.1 Marine verification records demonstrate compliance with standard maritime safety procedures (Marine Orders 91, 95 and 96).
	Refer to C 6.1 Section 6.6.4	Refer to PS 6.1 Section 6.6.4	Refer to MC 6.1.1 Section 6.6.4

6.6.6 Routine and Non-Routine Atmospheric and GHG Emissions

Context		
Subsea Support Vessels – Section 3.9	Physical Environment – Section 4.4	Consultation – Section 5

Impacts and Risks Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Atmospheric and GHG emissions associated with IMMR activities and associated vessels				x				A	1 - Minor	-	-	LCS GP PJ	Broadly Acceptable	EPO 8
Atmospheric and GHG emissions associated with onshore processing, third party transportation, regassification and combustion by end users				x	x			B	1-Minor	-	-	LCS GP PJ RBA CV SV	Acceptable if ALARP	EPO 9

Description of Source of Impact

Atmospheric emissions associated with the Macedon field production system, as assessed in this EP, can be classified into two categories:

- Atmospheric pollutants (non-GHG emissions) refer to gases or particles produced from up to two IMMR vessels within the Operational Area, which are discharged to the atmosphere and pose a recognised level of adverse effect on flora, fauna and/or human health.
- GHG emissions refer to gases that trap heat within the atmosphere through the adsorption of longwave radiation reflected from the earth's surface. This includes both direct and indirect GHG emissions.

In this section GHG are estimated using the National Greenhouse and Energy Reporting (NGER) Measurement Determination 2008 (as amended including 100-year Global Warming Potential).

Indirect Atmospheric and GHG emissions

GHG and Atmospheric Emissions from Vessels

GHG and atmospheric emissions are generated by vessels involved in IMMR activities from internal combustion engines, but may also include generators and deck equipment. Atmospheric emissions will include SOx, NOx, particulates and VOCs. SOx and particulate matter emissions are heavily influenced by the fuel used and its relative sulphur content e.g. marine grade oil (MGO) has a lower sulphite content than heavy fuel oil (HFO).

GHG emissions generated during the petroleum activities program will vary, however an estimate has been provided for a typical, routine IMMR activity, being a full Macedon pipeline inspection in Commonwealth waters using up to two crewed subsea support vessels which consume a total of approximately 9000 L of marine diesel (MDO) per day and

takes approximately five days to complete. Estimated GHG emissions for this type of IMMR campaign is 112 $tCOe^2$. All smaller campaigns requiring only one IMMR vessel will consume less fuel and will generate less GHG emissions.

This figure is an estimate only and does not include steaming to or from the Operational Area, or time in harbour. Inspections are undertaken on a 1-5 year frequency, based on RBI methodology. The actual consumption of fuel varies based on factors such as the nature of activity being undertaken by the vessel, metocean conditions, crewed or uncrewed etc. Applying definitions from the GHG Protocol Corporate Accounting and Reporting Standard, GHG emissions associated with the activity are considered indirect because they are not from sources that are owned or controlled by Woodside. Therefore while Woodside has influence over GHG emissions from the vessels via contractual arrangements and scope definition, Woodside does not have the authority to implement operational policies.

GHG Emissions from Processing and Product End-use Attributable to Macedon

Indirect emissions associated with the Macedon field production system results from hydrocarbon processing (onshore) and customer consumption of domestic gas. Indirect GHG emissions attributed to the Macedon field production system were estimated using forecasted production based on expected reservoir performance and accepted emission factors. Key influences impacting indirect GHG emissions associated with the Macedon field production system include:

- Total production – indirect emissions are proportional to total production, which varies with shutdown activity, new field tiebacks or gradual reservoir decline.
- Composition of produced gas – onshore emissions are proportional to reservoir CO_2.

Based on forecasted production rates, the indirect emissions from the Macedon field production system, including those from onshore hydrocarbon processing and domestic gas end user consumption are estimated to be approximately 3.93 $MtCO_2e$ per annum.

These annual emissions are likely to continue through this EP period and may also continue until current EOFL in 2038, totalling 29.45 MtCO2e. This estimate may vary, particularly the timeframe beyond this current EP period, as it is subject to many factors, such as reservoir performance.

Woodside's current forecast is that the reservoir(s) produced via the Macedon field production system will decline toward EOFL. Other reservoirs may be discovered and/or tied-back to Macedon to mitigate the decline, but overall, the trend of hydrocarbon production from Macedon and associated indirect emissions from onshore processing and domestic gas consumption are expected to also decline over the life of the asset.

Table 6-8: Summary of indirect GHG emissions attributable to Macedon

Source of Impact	Annual estimated emissions (MtCO2e)	Total possible emissions to EOFL[1] (MtCO2e)
Indirect GHG Emissions		
Vessel fuel consumption	0.0001	0.0014
Onshore hydrocarbon processing (managed under the WA State legislation)	0.131	1.9
Domestic gas consumption	3.802	27.55

source: Macedon NGER report FY2021/22 and Macedon Forecasts, NGER Determination

source: NGER Schedule 1 (Consumption) S3.80 (Distribution)

[1] This is the estimate at the time of EP submission. Reservoir performance, potential tieback of new wells, and expected end of field life is continuously reviewed during production life.

Global efforts to reduce greenhouse gas emissions in order to meet climate goals are changing the way the world produces and consumes energy. This energy transition is uncertain and there is a wide range of potential demand for oil, gas and new energy including in pathways consistent with limiting global temperature rise. Today, Woodside has a portfolio of oil and gas assets. We are also developing a portfolio of new energy products and lower carbon services. Across our portfolio we seek to match the pace, scale and needs of our customers as they determine their own decarbonisation pathways. We see an ongoing role for natural gas from Macedon to support our customers plans to secure their energy needs, while they reduce their emissions.

In the 2019 report *The Role of Gas in Today's Energy Transition,* the IEA indicates that electricity generation fuelled with natural gas typically releases about half the lifecycle amount of greenhouse gases compared to electricity generation fuelled with coal (IEA 2019). Additionally, natural gas-fired electricity generation offers a flexible means of providing support to batteries and helps stabilise the power grid during periods of decreased renewable energy production (e.g. at night or when the wind is calm).

Energy demand is expected to increase in Australia and globally. Since the availability of gas can support the reduction of more carbon-intensive firming fuel sources such as coal, rather than displacing renewable energy, it cannot be assumed that emissions associated with customer consumption of Macedon gas would be entirely additive to global atmospheric emissions.

Impact Assessment

Air Quality

Vessel routine and non-routine emissions, predominantly routine fuel combustion have the potential to generate dark smoke and particulates resulting in a localised and temporary reduction in air quality. Potential impacts of atmospheric emissions depend on the nature of the emissions, as well as the location and nature of the receiving environment.

The Operational Area is in a remote offshore location, with no expected adverse interaction with populated areas or sensitive environmental receptors associated with air emissions.

There is a breeding BIA for the wedge-tailed shearwater overlapping the Operational Area; as such, wedge-tailed shearwaters may occur nearby. The nearest potential seabird roosting habitat is at the Muiron Islands which lies approximately 8.7 km south of the Operational Area at the closest point. Whilst the Muiron Islands is known to be one of the largest nesting sites for wedge-tailed shearwater birds, the limited volume of emissions from the short duration and infrequent activities expected in the Operational Area, combined with the highly dispersed nature of air emissions; means that no adverse impacts to wedge-tailed shearwaters are anticipated.

Potential impacts are expected to be short-term, and limited to the airshed local to the Operational Area. Air emission impacts are not expected to have direct or cumulative impacts on sensitive environmental receptors, or above National Environmental Protection (Ambient Air Quality) measures.

Greenhouse Gas Emissions - Habitat and Biological Communities, Protected Species, Key Ecological Features, Protected Places, Socioeconomic and Cultural Environment

This impact assessment considers the potential impacts of climate change on sensitive receptors, including MNES within Australian jurisdictions. Climate change impacts cannot be directly attributed to any one activity, as they are instead the result of global GHG emissions, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution started. They do not take into account the net impact of each project or activity.

Impacts relating to climate change associated with the emission of GHG (direct and indirect) have been assessed in this EP in accordance with the EPBC Act Policy Statement - 'Indirect consequences' of an action: Section 527E of the EPBC Act (DSEWPAC, 2013).

Climate change impacts upon Australian receptors cannot be directly causally linked to the Macedon facility but are instead the result of the accumulation of greenhouse gas emissions in the atmosphere. The accumulation of greenhouse gas emissions in the atmosphere is, in turn, influenced by global energy demand and the composition of the global energy mix. The following contextual evaluation is provided. This contextual evaluation assessment considers the potential impacts of climate change on sensitive receptors, including MNES within Australian jurisdictions.

Climate science is a rapidly evolving field in which new observations continue to deepen understanding of the current and potential impacts of global warming, and the possible pathways for mitigation and adaptation).

The IPCC is the United Nations body for assessing the science related to climate change, and finalised the Sixth Assessment Report (AR6) in 2023. This consists of three Working Group contributions and a Synthesis Report. A summary of outcomes of the working group's contributions comprises a range of matters, which amongst others include:

The AR6 Working Group I (AR6-WG1) report stated that it is unequivocal that there is human-induced warming. It also stated that increased atmospheric carbon dioxide (CO_2) levels, generated by human activity, are the largest driver of warming over the longer term, and that there are a range of factors, including emissions of methane, which increase warming in the short-term.

The AR6-WG2 report stated that human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability. It stated that global warming, reaching 1.5°C in the near-term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans. The report noted that societal choices and actions implemented in the next decade will determine the extent to which medium- and long-term pathways will deliver climate resilient development.

The AR6 Working Group III (AR6-WG3) report provided an updated global assessment of climate change mitigation progress and pledges, and examined the sources of global emissions. It explained developments in emissions reduction and mitigation efforts, and assessed the impact of national climate pledges in relation to long-term emissions goals. More than 2,000 quantitative emissions pathways were submitted to the IPCC, of which 1,202 scenarios included sufficient information for assessing the associated warming. The report found that there are many pathways in the literature that likely limit global warming to 2°C with no overshoot , or to 1.5°C with limited overshoot. These variations occur because, while climate science is able to calculate a 'carbon budget' of net emissions before any particular temperature outcome is reached, the allocation of this budget between different human activities requires additional judgements about for example technology, economics, consumer preferences and policy choices.

The AR6 Working Group I (AR6-WGI) report states "[c]limate change is a global phenomenon, but manifests differently in different regions" (IPCC 2021b). IPCC projections for climate change in Australia from the AR6 Working Group II (AR6-WGII) report include:

- further climate change is inevitable, with the rate and magnitude largely dependent on the emission pathway (very high confidence)[36]
- ongoing warming is projected, with more hot days and fewer cold days (very high confidence)
- further sea level rise, ocean warming, and ocean acidification are projected (very high confidence)
- less winter and spring rainfall is projected in southern Australia, with more winter rainfall in Tasmania, less autumn rainfall in southwestern Victoria and less summer rainfall in western Tasmania (medium confidence), with uncertain rainfall changes in northern Australia.
- more extreme fire weather is projected in southern and eastern Australia (high confidence)
- increased drought frequency is projected for southern and eastern Australia (medium confidence)
- increased heavy rainfall intensity is projected, with fewer tropical cyclones and a greater proportion of severe cyclones (medium confidence) (Lawrence et al. 2022).

The AR6-WGII report identified nine key climate risks for the Australasian region:

- loss and degradation of coral reefs and associated biodiversity and ecosystem service values in Australia due to ocean warming and marine heatwaves (very high confidence)
- loss of alpine biodiversity in Australia due to less snow (high confidence)
- transition or collapse of alpine ash, snowgum woodland, pencil pine and northern jarrah forests in southern Australia due to hotter and drier conditions with more fires (high confidence)
- loss of kelp forests in southern Australia due to ocean warming, marine heatwaves, and overgrazing by climate-driven range extensions of herbivore fish and urchins (high confidence)
- loss of natural and human systems in low-lying coastal areas due to sea level rise (high confidence)
- disruption and decline in agricultural production and increased stress in rural communities in south-western, southern and eastern mainland Australia due to hotter and drier conditions (high confidence)
- increase in heat-related mortality and morbidity for people and wildlife in Australia due to heatwaves (high confidence)
- cascading, compounding and aggregate impacts on cities, settlements, infrastructure, supply-chains and services due to wildfires, floods, droughts, heatwaves, storms and sea level rise (high confidence)
- inability of institutions and governance systems to manage climate risks (high confidence) (Lawrence et al. 2022).

For further information related to Woodside's approach to climate change, please see Section 5.3 'Managing Physical Risk' and Section 6.3 'A Just Transition' of Woodside's Climate Transition Action Plan and 2023 Progress Report (Woodside, 2024).

An earlier report by Australia's Biodiversity and Climate Change Advisory Group summarised the potential impacts of climate change to marine and terrestrial species, habitats and ecosystems across Australia (Steffen et al. 2009). The 2009 report identified examples of observed changes in Australia's biota that were considered consistent with the emerging climate change 'signal', as genetic constitution, geographic ranges, life cycles, populations, ecotonal boundaries, ecosystems, and disturbance regimes (Steffen et al. 2009). The report also stated:

"Biodiversity is one of the most vulnerable sectors to climate change"

"Australia's biodiversity is not distributed evenly over the continent but is clustered in a small number of hotspots with exceptionally rich biodiversity", and that these "include the Great Barrier Reef, south-west Western Australia, the Australian Alps, the Queensland Wet Tropics and the Kakadu wetlands"

Further, it was stated that "many of the most important impacts of climate change on biodiversity will be the indirect ones at the community and ecosystem levels, together with the interactive effects with existing stressors (Steffen et al. 2009). Future climate change (e.g. increased temperature and decreased, but more variable, rainfall) has the potential to have a range of impacts on ecological factors and threaten biodiversity in the Australian mediterranean ecosystem (CSIRO 2017).

Extensive modelling and monitoring studies over the last twenty years provide considerable evidence that global climate change is already affecting and will continue to affect species (Hoegh-Guldberg et al. 2018) however these impacts are likely to be highly species-dependent and spatially variable. The most frequently observed and cited ecological responses to climate change include species distributions shifting towards the poles, upwards in elevation and shifts in phenology (earlier and later autumn life-history events) (M. Dunlop et al. 2012). Climate change may not only change species distribution patterns but also life-history traits such as migration patterns, reproductive seasonality and sex ratios (Steffen et al. 2009).

Impacts of climate change such as altering temperature, rainfall patterns and fire regimes, are likely to lead to changes in vegetation structure across all terrestrial ecosystems within Australia (M. Dunlop et al. 2012; Steffen et al. 2009).

[36] A level of confidence is expressed using five qualifiers: very low, low, medium, high, and very high. For a given evidence and agreement statement, different confidence levels can be assigned, but increasing levels of evidence and degrees of agreement are correlated with increasing confidence (Lawrence et al. 2022).

Increases in fire regimes will impact Australian ecosystems altering composition structure, habitat heterogeneity and ecosystem processes. Changes in climate variability, as well as averages, could also be important drivers of altered species interactions, both endemic and invasive species (M. Dunlop et al. 2012). Climate change could result in significant ecosystem shifts, as well as alterations to species ranges and abundances within those ecosystems (Hoegh-Guldberg et al. 2018).

The 'loss of climatic habitat caused by anthropogenic emissions of greenhouse gases' has been listed as a key threatening process under the EPBC Act (DCCEEW 2021). The threatening process consists of reductions in the bioclimatic range within which a given species or ecological community exists due to emissions induced by human activities of greenhouse gases (DCCEEW 2021). The process is considered to have a continental distribution, including both terrestrial and marine areas. Ecosystems in which the process occurs include: alpine habitats, coral reefs, wetlands and coastal ecosystems, polar communities, tropical forests, temperate forests, and arid and semi-arid environments (DCCEEW 2021).

Coral reefs were recognised by both IPCC and the Australian Government as being at risk of climate change (Lawrence et al. 2022; DCCEEW 2021). Protected coral reef areas in Australia include those within World Heritage listed sites, such as Ningaloo Coast, Shark Bay, or the Great Barrier Reef. Climate change has been identified as a threat for each of these World Heritage areas, with potential risks to coral reef as well as other environmental values (such as marine fauna) within these ecosystems (IUCN 2020b; 2020c; 2020a).

Climate variability and change has been identified as a threat to some EPBC Act protected species, including marine turtles, whales, seabirds and migratory shorebirds:

- the Recovery Plan for Marine Turtles in Australia (CoA 2017) states that "climate change is of particular concern to marine turtles because it is likely to have impacts across their entire range and at all life stages. Climate change is expected to cause changes in dispersal patterns, food webs, species range, primary sex ratios, habitat availability, reproductive success and survivorship".
- the Conservation Management Plan for the Blue Whale (CoA 2015a) states: climate change is expected to cause changes in migratory timing and destinations, population range, breeding schedule, reproductive success and survival of baleen whales, including blue whale species and subspecies"
- the Wildlife Conservation Plan for Seabirds (CoA 2022) states that "consequences to seabirds could include negative impacts from an increase in extreme weather events, reduced or changed prey abundance and distribution, and decrease in nesting habitat"
- the Wildlife Conservation Plan for Migratory Shorebirds (CoA 2015) states that 'such changes have the potential to affect migratory shorebirds and their habitats by reducing the extent of coastal and inland wetlands or through a poleward shift in the range of many species".

The North-west Marine Parks Network Management Plan 2018 (DNP 2018) identifies climate change as a pressure that may impact marine park values. The management plan states that "the impacts of climate change on the marine environment are complex and may include changes in sea temperature, sea level, ocean acidification, sea currents, increased storm frequency and intensity, species range extensions or local extinctions, all of which have the potential to impact on marine park values" (DNP 2018).

Within the Marine Bioregional Plan for the NWMR (DSEWPaC 2012), pressures related to climate change are assessed as 'of potential concern' for species of marine turtle, inshore dolphins, sawfish, sea snakes, whale shark, dugong, and seabird and shorebird, as well as the KEFs and shipwrecks known to occur in the NWMR.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[37]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Vessel operations compliant with Marine Order 97 (Marine Pollution Prevention – Air Pollution).	F: Yes CS: Minimal cost. Standard Practice.	Marine Order 97 is required under Australian regulations; implementation is standard practice for	Control based on legislative requirements – must be adopted.	Yes C 8.1

37 Qualitative measure

		commercial vessels as applicable to vessel size, type and class.		
National Greenhouse and Energy Reporting Scheme and National Pollutant Inventory (NPI) reporting – estimation of greenhouse gas, energy and criteria pollutants.	F: Yes CS: Minimal cost. Standard Practice.	Control based on legislative requirements to provide the national reporting framework for the reporting and dissemination of information related to emissions, hazardous wastes, greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production to meet the objectives and desired outcomes of the legislation(s) such as: the maintenance and improvement of air and water quality, minimisation of environmental impacts associated with hazardous wastes; and an improvement in the sustainable use of resources; and act as the single framework to inform policy, meet reporting requirements, avoid duplication, and to ensure that facility net greenhouse gas emissions are managed within applicable baselines.	Control based on legislative requirements – must be adopted.	Yes C 8.2
Good Practice				

Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon / alternative fuels.	F: Yes CS: Fuel cost over the five year contract is considered in evaluation of responses, allowing for competitive consideration of low carbon alternatives (e.g. batteries).	Minimises cost and emissions through eco-efficiency approach recognising cost of fuel and carbon emissions over the contract term	Control effectively allocates a cost to emissions to recognise that higher emitting fuel sources with other lower operating costs do not represent overall best value.	Yes C 8.3
Vessels will hold a current International Air Pollution Prevention (IAPP) Certificate or equivalent.	F: Yes CS: Standard Practice. Minimal Cost	Ensures only vessels that comply with IAPP Certificate requirements are used for the Petroleum Activities Program, ultimately reducing the potential for unnecessary emissions.	Controls based on legislative requirements must be accepted. Benefits outweigh any cost sacrifice.	Yes C 8.4
The vessels will use marine-grade low sulphur diesel.	F: Yes CS: Standard Practice. Minimal Cost	Reduces the level of pollutants released to the environment during fuel combustion.	Controls based on legislative requirements must be accepted. Benefits outweigh any cost sacrifice.	Yes C 8.5
Woodside supports customers to reduce their emissions via the investment in new energy products and lower carbon services, including the progression of corporate Scope 3 targets that apply across Woodside's portfolio including the following: • Scope 3 Investment Target: Woodside has a Scope 3 investment target aiming to invest $5 billion in new energy products and lower carbon services (non LNG) by 2030[38]. Scope 3 Emissions Abatement Target: Woodside has a Scope 3 emissions abatement target, to indicate the potential abatement impact of these products and services upon customer Scope 1 or 2 emissions. This target is to take final investment decisions on new energy products and lower carbon services by	F: Yes CS: Cost as reflected in target	Supports customers to reduce their scope 1 and 2 emissions	Proportional at a Woodside corporate level	Yes C 9.1

[38] Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment. Timing refers to financial investment decision, not start-up/operations.

2030, with total abatement capacity of 5 Mtpa CO2 -e[39]				
Through it's portfolio, Woodside will work with the natural gas value chain to reduce emissions in third party systems (e.g. regasification and distribution), such as: • through the adoption and promotion of the Methane Guiding Principles, • sharing knowledge of methane reduction via Australian industry forums and other companies in the natural gas value chain • Advocacy for stable policy frameworks that reduce carbon emissions. • Annual review of the implementation of these measures	F: Yes CS: Minimal cost associated with collaboration and advocacy	Supports customers to reduce their scope 1 and 2 emissions	Proportional at a Woodside corporate level	Yes C 9.2
Professional Judgement – Eliminate				
None identified				
Professional Judgement – Substitute				
Use of renewable energy to power vessel.	F: No. Not commercially proven for large vessels that require a reliable steady fuel source. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement – Engineered Solution				
None identified				

ALARP Statement:

Atmospheric Emissions

On the basis of the environmental risk assessment outcomes and the use of the relevant tools appropriate to decision type A, Woodside considers the adopted controls appropriate to manage the impacts of atmospheric emissions. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.

GHG Emissions

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision type B), Woodside considers the adopted controls appropriate to manage GHG emissions from vessels and indirect emissions sources that Woodside can practicably influence during the term of this EP. The adopted controls meet legislative requirements including:

- Marine order 97 for support vessels
- NGERS and NPI reporting for direct emissions attributed to Macedon
- National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015.
- Indirect GHG emissions from onshore processing are managed under Ministerial Statement 844

Consultation was undertaken for this activity to identify the views and concerns of relevant stakeholders, as described in Section 5. No specific concerns around air emissions, resulting in changes to air quality and greenhouse gas emissions, were identified through this process.

[39] The customers for these products and services may be the same as the customers of our oil and gas business, directly substituting their energy for new products or directly abating the associated emissions. They may also be customers of the new products and services, without also being customers of oil and gas.

As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.

Demonstration of Acceptability

Acceptability Statement: Atmospheric Emissions

Given the adopted controls, atmospheric emissions represent a negligible impact that is unlikely to result in greater than isolated impacts within close proximity of the Operational Area. The adopted controls are considered good oil-field practice/industry best practice and meet requirements of Australian Marine Orders and National Pollutant Inventory reporting.

The potential impacts and risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of atmospheric emissions to a level that is broadly acceptable and they demonstrate that the EPOs are met.

Acceptability Statement: Greenhouse Gas Emissions

To assess and determine that impacts from GHG emissions will be of an acceptable level, Woodside considered corporate commitments, principles of Ecologically Sustainable Development, Company Values and Societal Values.

Principles of ESD

Giving consideration to economic development that safeguards the welfare of future generations, Macedon is considered to align with the following core objectives of ESD by:

Responding to the global energy transition, providing a reliable energy source as gas is expected to play a key role in the future energy mix (e.g. partner with renewables). In addition, gas has the potential to contribute to an incremental reduction in global GHG emissions by displacing more carbon intensive power generation (e.g. coal), firming up renewables, or in hard-to-abate sectors.

Committing to management and mitigation measures for GHG emissions within operational control of the facility, given the uncertainty about future climate change trajectories.

Committing to mitigation measures for indirect GHG emissions that are controlled or influenced by Operator and connected to the operations of the Macedon offshore infrastructure.

Contributing to the UN Sustainable Development Goals of achieving universal access to energy.

Providing gas to customers within countries that have ratified the Paris agreement, where each country is responsible for accounting for, reporting and reducing emissions that physically occur in its jurisdiction.

Internal Context

The Petroleum Activities Program is consistent with Woodside corporate polices, culture, processes, standards, structure and systems as outlined in the demonstration of ALARP and environmental performance outcomes, including:

Woodside Environment and Biodiversity Policy (Appendix A).

- Woodside Climate Change Policy (Appendix J Woodside Climate Change Policy)

External Context

Woodside recognises that our licence to operate from a regulator and societal perspective is based on historical performance, complying with appropriate policies, standards and procedures, and understanding the expectations of external stakeholders. GHG emissions are a global concern as such Woodside has undertaken an impact assessment of GHG from the Macedon operations and implemented the mitigation and management controls to manage potential impacts to an acceptable level.

As stated by the Australian Energy market Operator (AEMO),

[the 2023 data shows] strong growth in electricity demand, driven by electrification, electric vehicle uptake, and new energy-intensive industries including green hydrogen production. Several of these trends lead to reduced gas consumption. However, increases in expected electricity consumption, coupled with the phased closure of state-owned coal power stations has a corresponding impact on modelled use of gas-powered generation to support the transition to a majority-renewables power system

And

Pressures associated with future coal supply and the planned retirements of coal-fired generation, are expected to increase the reliance of the South West Integrated System (SWIS) gas powered generation (GPG) fleet, and GPG is expected to play an important role, along with renewables, storage and supporting transmissions infrastructure, in ensuring the reliability in the SWIS as the energy transition continues. (AEMO 2023)

Macedon will deliver gas to the WA market, at a time when WA is predicted to face supply shortages. According to 2023 WA Gas Statement of Opportunities report by AEMO it is forecast there will be insufficient gas supply to meet

WA demand (AEMO, 2023). Macedon gas will help to address the anticipated forecast supply gap in the WA domestic gas market, which may assist with the reliability of the SWIS to enable further renewable power generation.

The global consensus on climate change led to the implementation of the Paris Agreement. The aim of the Paris Agreement, as stated in the Article 2.1(a), is to hold the increase in global average temperature to well below 2°C above pre-industrial levels. The Agreement also aims to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change.

Paris Agreement text extract[40]:

"Article 2

1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

(a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;"

This was reaffirmed in December 2023 in the COP28 decision text on the First global stocktake.[41] The text further recognized that the transition away from fossil fuels in energy systems is to be done in a just, orderly and equitable manner accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science.[42] It also recognises that transitional fuels can play a role in facilitating the energy transition while ensuring energy security[43].

The Paris Agreement establishes a framework where countries make Nationally Determined Contributions (NDCs) to manage and reduce their own emissions.

Australia has ratified the Paris Agreement and has set a target to reduce emissions by 43 per cent below 2005 levels by 2030 and to reach net-zero emissions by 2050. Australia's emissions projections under a 'with additional measures' scenario is projected to be 43% below 2005 levels by 2030 and to reach net zero emissions by 2050 (DISER 2022a). Australia's emissions projections demonstrate that it is on track to reduce emissions by up to 43% below 2005 levels by 2030 (DCCEEW 2022; DISER 2022a).

Woodside considers that a stable energy transition will be one in which energy is affordable and reliable, as well as lower carbon. The Macedon facility will provide an incremental volume of hydrocarbons to Australian markets during its estimated remaining field life. Woodside considers that this development is aligned with their goals for supporting the energy transition and is compatible with the Paris Agreement goal to limit global warming to below 2°C.

Other requirements (includes laws, polices, standards and conventions):

Legislation and other requirements considered relevant for this aspect, and a demonstration of how these requirements are met, are described below.

Requirement Demonstration	Requirement Demonstration
Marine Order 97 Gives effect to Annex VI of MARPOL 73/78	The requirements of Marine Order 97 are incorporated into the key control measures.
National Greenhouse and Energy Reporting (NGER) scheme Annual GHG reporting for facilities	The requirements of NGER reporting scheme are incorporated into the key control measures.
National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 Emission intensity for reservoir carbon from new gas fields	The requirements of NGER Safeguard Mechanism are assessed, and where required, are incorporated into the key control measures. Macedon is not subject to these requirements at the time of this EP submission.
National Pollutant Inventory (NPI) Reporting Annual air pollutant reporting	The requirements of annual NPI reporting are incorporated into the key control measures.

[40] Paris Agreement: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf
[41] FCCC/PA/CMA/2023L.17 (Draft decision distributed 13 December 2023) First global stocktake text extracts https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf (Section I, Clause 3)
[42] FCCC/PA/CMA/2023L.17 (Draft decision distributed 13 December 2023) First global stocktake text extracts https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf (Section II, Subsection A, Clause 28 (d))
[43] FCCC/PA/CMA/2023L.17 (Draft decision distributed 13 December 2023) First global stocktake text extracts https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf (Section II, Subsection A, Clause 29)

Conservation Management Plan for the Blue Whale 2015–2025 Management action A3.1: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica Conservation Advice Balaenoptera borealis Sei Whale Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica Conservation Advice Balaenoptera physalus Fin Whale Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica National Recovery Plan for the Southern Right Whale action area A3.1: Continue to meet Australia's international commitments to address causes of climate change, including greenhouse gas emissions. Recovery Plan for Marine Turtles in Australia Management action A2.1: Continue to meet Australia's international commitments to address the causes of climate change	As described above, the predicted atmospheric and GHG emissions from the Macedon facility are considered negligible, with no link to climate change impacts on Australian or International receptors. Therefore, the Macedon facility is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale 2015–2025 (CoA, 2015a), Conservation Advice for Sei Whale (TSSC 2015a), Conservation Advice for Fin Whale (TSSC, 2015b), National Recovery Plan for the Southern Right Whale (DCCEEW, 2024), or the Recovery Plan for Marine Turtles in Australia (CoA, 2017).
Conservation Advice Rhincodon typus Whale Shark No specific strategies or actions identified Recovery Plan for the White Shark (Carcharodon carcharias) No specific strategies or actions identified Wildlife Conservation Plan for Seabirds No specific strategies or actions identified Wildlife Conservation Plan for Migratory Shorebirds No specific strategies or actions identified Marine bioregional plan for the North-west Marine Region No specific strategies or actions identified North-west Marine Parks Network Management Plan No specific zone rules identified	N/A

Acceptability Statement: Greenhouse Gas Emissions

As per Section 2.7.2 decision type B are acceptable if "ALARP", demonstrated using good industry practice and risk-based analysis, if legislative requirements are met and societal concerns are accounted for and the alternative control measures are grossly disproportionate to the benefit gained. In addition, acceptability is assessed against the above criteria. Further opportunities to reduce the impacts have been investigated (refer ALARP demonstration discussion). Indirect GHG emissions associated with the Macedon facility are managed to an acceptable level by meeting (where they exist) legislative requirements, industry codes and standards, applicable company requirements, and industry guidelines, and these have been adopted as key controls. The adopted controls are considered good oil-field practice/industry best practice and are consistent with Woodside's internal requirements. The potential impacts are considered acceptable if ALARP is demonstrated. As described above, the predicted GHG emissions associated with the Macedon facility are considered negligible and as such, below the acceptable levels and will not materially or substantially contribute to Australia's net GHG emissions or net Global GHG emissions levels

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 8 Minimise GHG emissions from vessels through	C 8.1 Contract vessels compliant with Marine Order 97 (Marine Pollution Prevention – Air Pollution).	PS 8.1 Vessels contracted whose practices comply with Marine Orders as	MC 8.1.1 Marine verification records.

efficient fuel usage and consideration of fuel types utilised.		applicable to vessel size, type and Class.	
	C 8.2 National Greenhouse and Energy Reporting Scheme and National Pollutant Inventory (NPI) reporting – estimation of greenhouse gas, energy and criteria pollutants	PS 8.2 Activity emissions reported annually in accordance with NGERS and NPI.	MC 8.2.1 NGERs and NPI reporting records.
	C 8.3 Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon / alternative fuels	PS 8.3 Evaluation of tenders for support vessels considers emissions parameters	MC 8.3.1 Records demonstrate that emissions were considered in tender evaluations
	C 8.4 Vessels will hold a current International Air Pollution Prevention (IAPP) Certificate or equivalent.	PS 8.4 AMSA Marine Order – Part 97: Marine Pollution Prevention - Air Pollution: Vessels will hold a current International Air Pollution Prevention (IAPP) Certificate.	MC 8.4.1 Vessels hold a current IAPP Certificate
	C 8.5 The vessels will use marine-grade low sulphur diesel.	PS 8.5 Protection of the Sea (Prevention of Pollution from Ships) Act1983 – Part IIID: Only low sulphur diesel will be used.	MC 8.5.1 Bunker delivery notes indicate only low sulphur diesel is used.
EPO 9 Woodside will support customers to reduce their GHG emissions.	**C 9.1** Woodside supports customers to reduce their emissions via the investment in new energy products and lower carbon services, including corporate targets that apply across Woodside's portfolio including the following: • Scope 3 Investment Target: Invest $5 billion in new energy products and lower carbon services (non LNG) by 2030[44]. • Scope 3 Emissions Abatement Target to take final investment decisions on new energy products and lower carbon services by 2030, with total	PS 9.1 Woodside will progress its Scope 3 investment and emissions targets, aligned with stated timeframes.	MC 9.1 Progress against targets reported in the relevant annual Woodside disclosures to relevant industry standards and/or requirements**.**

[44] Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment. Timing refers to financial investment decision, not start-up/operations.

	abatement capacity of 5 Mtpa CO_2 -e[45].		
	C 9.2 • Through its portfolio, Woodside will work with the natural gas value chain to reduce emissions in third party systems (e.g. regasification and distribution)	PS 9.2 Woodside to implement the following: • sharing knowledge via Australian industry forums and other companies in the natural gas value chain through: ○ the adoption and promotion of global methane frameworks such as the Methane Guiding Principles and Oil and Gas Decarbonisation Charter ○ Advocacy for stable policy frameworks that reduce carbon emissions. • Annual review of the implementation of these measures, this includes consideration of current or new industry forums, initiatives and natural gas value chain participants	MC 9.2 Records demonstrate that listed actions have been undertaken

[45] The customers for these products and services may be the same as the customers of our oil and gas business, directly substituting their energy for new products or directly abating the associated emissions. They may also be customers of the new products and services, without also being customers of oil and gas.

6.6.7 Routine Light Emissions: Light Emissions from Vessel Operations

Context		
Subsea Inspection, Monitoring, Maintenance and Repair Activities – Section 3.8 Subsea Support Vessels – Section 3.9	Biological Environment – Section 4.5 Protected Species – Section 4.6	Consultation – 5

Impacts and Risks Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Light emissions from an IMMR vessel.						x		A	1 - Minor	-	-	LCS GP	Tolerable	EPO 10

Description of Source of Impact

An IMMR vessel will have external lighting to support safe navigation and safe operations at night. Subsea will be undertaken from a single subsea support vessel or Uncrewed Surface Vessel (USV) and may use an ROV with transponders or autonomous underwater vehicles (AUV). The required frequency and duration of subsea IMMR activities is one campaign of up to two weeks duration.

Lighting is used to safely support 24-hour operations and to communicate the presence of subsea intervention vessels to other marine users (i.e., navigation lights). Up to two IMMR vessels could be within the Operational Area at any one time. These vessels will have external lighting, typically consisting of bright white (i.e. metal halide, halogen, fluorescent) lights, which are not dissimilar to lighting used for other offshore activities, including those undertaken by the fishing and shipping industries. As lighting is required for the safe operation of the vessels it cannot reasonably be eliminated. External lighting is located all over vessels, with most external lighting directed towards working areas, such as the back deck. External lighting on vessels is typically 10-15 m above water.

Underwater lighting is also planned to be generated over short periods of time while ROVs are in use. Given the typical intensity of ROV lights and the attenuation of light in seawater, light from ROVs will be localised to the immediate vicinity of the ROV and vessels.

Whilst IMMR vessel light inventories may vary, they are not considered to be greater than those of a trailer suction hopper dredge (TSHD) or pipelay vessel which have been previously modelled for Woodside activities (PENV 2022). These vessels were used as conservative analogues for IMMR activities in the Petroleum Activities Program. For evaluating the impact of Artificial Light At Night (ALAN) on marine turtles, PENV developed an approach based on the visibility of the full moon. Modelling undertaken indicated that light emissions were predicted to reduce to ambient levels (0.01, or 1%, radiance of a full moon) at 5.7 km and 3.2 km from a representative pipelay vessel and TSHD, respectively (PENV 2022).

Impact Assessment

Receptors that have important habitat present within a 20 km buffer of the Operational Area were considered as having potential for interaction, based on recommendations of the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (Commonwealth of Australia, 2020) (National Light

Pollution Guidelines). The 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings (15 to 18 km) and fledgling seabirds grounded in response to artificial light 15 km away.

Light emissions have the potential to disrupt ecological processes that rely on natural light for visual cues. Light emissions can affect fauna in two main ways:

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

The majority of fauna expected within the Operational Area are predominantly pelagic fish and zooplankton, with a low abundance of transient species primarily associated with known critical habitat within the Operational Area for three EPBC listed marine turtle species (see Section 4.6.2), as well as BIAs for a variety of species listed in Section 4.6.

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 most vulnerable life stages for seabirds and migratory shorebirds, for which artificial lighting may pose a threat, are nesting adults or fledglings. Nesting or fledgling seabirds and migratory shorebirds are vulnerable to artificial lighting within 20 km of the nesting location (Commonwealth of Australia, 2020).

The Operational Area overlaps a breeding BIA for the Wedge-tailed shearwater. Although there is no emergent land that could be used for roosting or nesting habitat within the Operational Area, there is suitable habitat at the Muiron Islands (approximately 8.7 km south of the Operational Area). No other seabirds have BIAs within 20 km of the Operational Area.

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). Therefore, light emitted from vessels during IMMR vessels are unlikely to cause impact.

Artificial light can also impact important behaviour of nesting adult shearwaters (e.g. adult nest attendance, maintaining nest sites), resulting in injury or mortality as a result of birds becoming confused or disoriented and colliding with structures (Cianchetti-Benedetti et al., 2018; Rodriguez et al., 2017). Although there is no suitable nesting habitat within the Operational Area, nesting adults could be present within 20 km of the Operational Area at the Muiron Islands (8.7 km south). However, due to the infrequent and short duration of IMMR activities (up to 2 weeks per year) and their infrequent nature, any impacts would be minor and temporary.

Outside the area of potential impact suggested by the National Light Pollution Guidelines (where light from the vessels may be visible) is the breeding BIAs for the fair tern and lesser crested tern. Both of these species are diurnal and are not expected to be impacted by lighting from the petroleum activity.

Marine Turtles

The Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017) outlines threats to the survival of marine turtles and includes light pollution.

The Operational Area is within the following marine turtle BIAs and Habitat Critical for the Survival of the Species:

- BIA - Flatback turtle: Internesting buffer, Thevenard Island – south coast
- BIA - Green turtle: Internesting buffer, north and south Muiron Island
- BIA - Green turtle: Internesting buffer, North West Cape
- BIA - Hawksbill turtle: Internesting buffer, Ningaloo coast and Jurabi coast
- BIA - Loggerhead turtle: Internesting buffer, Ningaloo coast and Jurabi coast
- BIA - Loggerhead turtle: Internesting buffer, Lowenthal Island
- Habitat Critical to the Survival of the Species – Green turtle nesting
- Habitat Critical to the Survival of the Species – Flatback turtle nesting
- Habitat Critical to the Survival of the Species – Hawksbill turtle nesting

The following marine turtle BIAs and Habitat Critical for the Survival of the Species are within 20 km of the Operational Area:

- BIA - Green turtle: Nesting, North and South Muiron Island
- BIA - Hawksbill turtle: Nesting, Ningaloo coast and Jurabi coast
- BIA - Loggerhead turtle: Nesting, Muiron Island
- BIA - Loggerhead turtle: Nesting, Ningaloo coast and Jurabi coast
- Habitat Critical to the Survival of the Species – Loggerhead turtle nesting

Light pollution reaching turtle nesting beaches is widely considered detrimental owing to its ability to alter important nocturnal activities, including choice of nesting sites and orientation/navigation to the sea by hatchlings (Windle et al. 2018; Witherington and Martin, 2003). The relevant Recovery Plan considers light pollution a threat to hatchling orientation, survivability/predation, and sea-finding behaviours and can disrupt nesting behaviours of mature females. The specific impacts to adults and hatchlings from the Petroleum Activities Program are described below.

Hatchlings

The nearest potential nesting sites in relation to the Operational Area are the Muiron Islands (8.7 km away) from where vessel lighting may be visible.

Turtle hatchlings emerge from their nest and orient towards the sea. Hatchlings generally show a preference of moving towards horizons which are low and bright, and moving away from horizons that are dark and elevated, using these cues to navigate towards the shoreline (Limpus and Kamrowski, 2013). 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.

After entering the water, hatchlings use a combination of cues (wave direction and currents) to orient and travel into offshore waters. The primary cue for hatchling turtle orientation is water movement, with hatchlings swimming towards oncoming waves (Lohmann et al. 1997). Artificial light at close distances can impact hatchling dispersal once they are in the water and 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).

Modelling predicted that light emissions would reduce to 0.01, or 1% radiance of a full moon (equivalent to the light output of the first quarter moon) within 5.7 km (PV) and 3.2 km (TSHD) (PENV 2022). At this level, light or light glow is visible but impact on hatchling behaviour is considered unlikely (i.e., not biologically relevant) (Aube et al., 2005).

There is potential for behavioural impacts to marine turtles to occur (greater than 0.1 full moon equivalent) within 1.8 km (PV) and 0.7 km (TSHD) (PENV 2022), but behavioural impacts are more likely (greater than radiance of one full moon) within 0.6 km (PV) and 0.2 km (TSHD) (PENV 2022).

Given that hatchlings distribution is likely to be governed by currents, any hatchlings dispersed by water currents to within 1.8 km of an IMMR vessel risking entrapment by lighting, would be very limited.

Given the distance from the nearest nesting location to the Operational Area (8.7 km at the closest point) and the short term, infrequent nature of the PAP vessel-based activities, any impacts to isolated hatchlings offshore are expected to be minor and temporary.

Adults

Although individuals undertaking behaviours such as internesting, migration, mating (adults) or foraging (adults and pelagic juveniles) may occur within the Operational Area, marine turtles do not use light cues to guide these behaviours (Pendoley 2017). Furthermore, there is no evidence, published or anecdotal, to suggest that internesting, mating, foraging or migrating turtles are impacted by light from offshore vessels. As such, light emissions from the IMMR vessels are unlikely to result in displacement of, or behavioural changes to individuals in these life stages (PENV 2020).

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 & Witherington, 1995; Salmon et al, 1995a, 1995b). Such lighting is typically from onshore residential and industrial development overlapping the coastline, rather than offshore from nesting beaches. As described above, the beaches on the Muiron Islands (8.7 km from the Operational Area) are the nearest known turtle nesting locations. Although light from IMMR vessels may be visible from these beaches, nesting females are not considered highly vulnerable to disorientation from offshore artificial light (Pendoley, 2020). It is also highly unlikely that the Petroleum Activities Program would cause disruption to sea-finding behaviour post nesting as the light source is located directly offshore in the same direction that females would be heading during normal sea-finding behaviour and IMMR activities requiring vessels have short durations and are very infrequent. As such, vessel light sources will not discourage females from nesting, or affect nest site selection, and therefore are not expected to displace females from nesting habitat.

It is acknowledged that the Operational Area overlaps habitat critical for the survival for Green, Flatback and Hawksbill turtles, and is within 20 km of the habitat critical for the survival of loggerhead turtles as defined in the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017). The Operational Area also overlaps internesting BIAs for a number of marine turtles.

Light is not thought to be an important cue for individuals that may move through the Operational Area offshore but adult turtles may temporarily alter their normal behaviour if attracted to the light spill from an IMMR vessel. Internesting marine turtles favour depths of < 25 m, and foraging turtles predominantly occur in waters shallower than 130 m (Whittock et al., 2014). Given the water depth of the Operational Area (60 – 180m), turtles are unlikely to be foraging except for in the eastern end of the trunkline. Internesting activities could occur within 20 km of the Operational Area, however considering the short duration and infrequent nature of IMMR activities impacts would be minor and temporary.

Vessels will be in the Operational Area infrequently and for short durations (up to two weeks per year). The level of lighting from vessels is relatively low compared to onshore 24-hour industrial developments, which is what most

studies are based on. Light emissions generated by the activity will be short-term and temporary, and likely to be from a single vessel during most standard IMMR campaigns. Subsequently, any impact to turtles will be limited to the duration of the IMMR activity, and only when operating within close proximity to the Muiron Islands i.e., along the pipeline route closest to the State waters boundary. Based on the frequency and nature of IMMR activities, the impacts to adult turtles are not expected to result in displacement of turtles from their habitats and are expected to be minor.

Fish

Lighting from the presence of a vessel may result in the localised aggregation of fish below the vessel. These aggregations of fish are considered localised and temporary and any long-term changes to fish species composition or abundance is considered highly unlikely given the frequency and duration of IMMR activities.

The Operational Area overlaps a whale shark foraging BIA which could see increased numbers of whale sharks within the Operational Area during foraging periods. Although whale sharks are unlikely to be directly impacted by light, some fish species that comprise their diet could be attracted to underwater light during IMMR activities. However, given that a large proportion of the diet comprises krill and other planktonic larvae, it is unlikely that a light source will lead to a significant increase in whale shark abundance in the vicinity of the IMMR vessels based on their attraction to food sources. Also, given the short term duration and infrequent presence of an IMMR vessel, in the unlikely event there were impacts to individual whale sharks they would be minor and temporary.

Localised impacts to marine fish are not expected to impact commercial fishers in the area.

Cumulative Assessment

Woodside have considered the potential light emitting activities that could overlap with the Petroleum Activities Program both temporally and spatially. This includes consideration of the proximity of Woodside's Ngujima-Yin, Pyrenees and Stybarrow operations, as well as Santos' Ningaloo Vision operations. Some of these (Ngujima-Yin, Pyrenees and Ningaloo Vision operations) involve continuous light emissions from the associated FPSOs and temporary lighting from supporting activities, whilst others involve temporary vessel activity only (Stybarrow). Further, there is an overlap between the Pyrenees Operational Area and the Macedon Operational Area in proximity to the Macedon-6 well, however, it is not expected that any more than two supply/IMMR vessels would be present in the Pyrenees Operational Area with one IMMR vessel used to complete tasks required for both fields sequentially.

The maximum distance at which vessel lighting is assessed to reduce to ambient is based on a larger pipelay vessel. Given the distance from the perimeter of the Operational Area to the nearest nesting beaches (8.7 km) IMMR vessel lighting is not anticipated to be discernible from ambient levels of light (PENV 2022).

Cumulative impacts to hatchlings of turtles would only arise if emergence was contemporaneous to one yearly IMMR activity campaign. In such instance, hatchlings would need to be dispersed with waves and currents to within 1.8 km of the IMMR vessel and other petroleum operations in the area (PENV 2022) to risk entrapment by lighting. The risk is considered unlikely given the infrequent and short-term nature of the activity and distance from shore of the IMMR vessel and other petroleum activities in the region. The impact is considered to be further reduced given that hatchling distribution is strongly affected by currents and waves. Any impact to isolated hatchlings offshore from an IMMR vessel in the Operational Area is considered to be very limited.

The WA Environmental Protection Authority (EPA) conservatively estimated the area of influence of lighting on turtles nesting to be within a radius of 1.5 km. This suggests that IMMR vessel and FPSO activities offshore, and the addition of IMMR vessels in the Operational Area are unlikely to disturb nesting activities at the nearest nesting beaches.

In summary, short-term and infrequent IMMR vessel activities are not considered sufficient to prevent significant biological behaviours to continue, nor is it sufficient to displace turtles from their habitats. Any impacts realised are expected to be minor and temporary.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[46]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Compliance with the project's Ministerial Conditions on EPBC Referral No. 2008/4605: "During	F: Yes CS: Standard practice. Minimal cost.	Light reduced to only provide necessary lighting for safety and navigational purposes, reducing	Controls based on legislative requirement must be accepted.	Yes C 10.1

46 Qualitative measure

night time operations external lighting on all vessels will be minimised to that required for safety of navigation and safety of deck operations".		the potential impacts to fauna.	Benefits outweigh any cost sacrifice.	
Good Practice				
No use of external lighting during Petroleum Activities Program.	F: No. Light management will be consistent with that required to provide a safe working environment onboard vessel. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Lighting modifications (shielding, directional lighting) to minimise over water light spill and light emissions during peak turtle hatchling season (Dec to Mar) for IMMR vessels operating in the Operational Area.	F: Yes, lighting is able to be modified on IMMR vessel(s). CS: Financial cost of changes and time associated with implementing these.	Reducing light spill over water and overall light glow from a vessel can reduce the likelihood that hatchling behaviour will be influenced. Previous light modelling undertaken by Woodside of a Pipelay Vessel and Trailer Suction Hopper Dredge (which is a highly conservative representation of an IMMR vessel) has predicted that light emissions will reduce to ambient levels at 5.7 km and 3.2 km, respectively, and hence will not be at levels likely to impact turtle behaviour at nesting beaches.	The cost/sacrifice outweighs benefit gained. Due to the minimum distance of IMMR activities from nearest nesting beaches (8.7 km) and the infrequent and temporary nature of IMMR activities, the benefits of implementing this control are expected to be minimal.	No
IMMR vessel crew will be trained in light reduction measures when operating within 20 km of islands between December and April (peak turtle hatchling emergence period is Dec-Mar, with the wedge-tailed shearwater fledgling emergence in Apr).	F: Yes. CS: Minimal cost/sacrifice.	Reducing overall light emissions from the vessel can reduce light glow and potentially lower the area over which vessel lighting may impact turtle and wedge-tailed shearwater fledglings behaviour. Given distance of the Operational Area from known turtle	While the control does not result in significant reduction of potential impacts, it is good practice to raise awareness.	Yes 10.2

		nesting beaches, a reduction in consequence from implementation of this control is not expected, however is possibly beneficial for wedge-tailed shearwater fledgings.		
Implement a Seabird Management Plan for IMMR vessels that includes: • Standardisation and maintenance of record keeping and reporting of seabird interactions. • Procedures on seabird intervention, care and management • Regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES). • A scalable adaptive management process should negative light impacts to nocturnal seabirds be detected	F: Yes. CS: Minimal.	Potential for slight reduction in the likelihood of seabird attraction to vessels resulting in a reduced likelihood of bird strikes.	Potential benefits outweigh cost sacrifice.	Yes C 10.3
Professional Judgement – Eliminate				
Substitute external lighting with ‘‘turtle friendly’’ light sources (e.g. lights containing short wavelength, violet/blue light, white LEDs).	F: Yes. Replacement of some/all external lighting with turtle friendly lighting is technically feasible. CS: Financial cost and time associated with retrofitting external lighting on the vessels. Logistical effort to source sufficient inventory of the range of light types required, and to schedule works required for the vessels. Impacts to safety where lighting no	Substituting external lighting will reduce light emissions in turtles’ visible spectrum. Impacts to hatchling dispersal resulting from vessel lighting are possible but will be limited by the distance of the Operational Area from the turtle nesting beaches and the temporary nature of vessel activities associated with the Petroleum Activities Program. Implementation of this control would not	The cost/sacrifice outweighs benefit gained.	No

	longer performs its function to the full extent intended.	result in a reduction in consequence.		
Variation of the timing of the Petroleum Activities Program to avoid IMMR activities during peak turtle internesting periods (October to February).	F: Yes. It is possible to avoid peak turtle hatchling emergence periods, through scheduling. CS: Significant cost and schedule impacts due to delays in securing vessels for specific timeframes	Implementation of this control would not result in a reduction in consequence due to the distance of the Operational Area from turtle nesting beaches.	The cost/sacrifice outweighs benefit gained.	No
IMMR activities which require direction of floodlights outside vessel(s) will preferentially occur during daylight hours for IMMR operations in December and April (peak turtle hatchling emergence period is Dec-Mar, with the wedge-tailed shearwater fledgling exodus in Apr).	F: Yes. CS: Cost implication and delay of required IMMR activities.	Reducing light spill onto the water can reduce hatchling attraction to vessel(s). Given the distance of the Operational Area from known turtle nesting beaches and wedge-tailed shearwater rookeries, a reduction in consequence from implementation of this control is not expected.	Implementation would be disproportionate to the risk reduction. While the control may reduce light spill, any IMMR activity is expected to be short in duration and infrequent.	No
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
IMMR vessels to use block-out blinds / curtains on accommodation windows at night between December and April (peak turtle hatchling emergence period is Dec-Mar, with the wedge-tailed shearwater fledgling exodus in Apr).	F: Yes. Installing block-out blinds / curtains is technically feasible. CS: Minimal cost/sacrifice. Accommodation modules on vessels usually have window treatments for crew comfort.	Reducing light emissions from the vessel at night can reduced light glow and the area over which light may impact turtle hatchling emergence and wedge-tailed shearwater fledgling exodus.	Benefits outweigh minimal cost/ sacrifice of implementation.	Yes C 10.4
None identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the potential impacts from routine light emissions from Macedon IMMR vessels to be ALARP. As no reasonable additional/ alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts and risks are considered ALARP, and demonstrate that the EPO is met.				

Demonstration of Acceptability
Acceptability Statement: The impact assessment has determined that, in its current state, operational light emissions from Macedon IMMR vessels represent a negligible disturbance to fauna within the Operational Area. Further opportunities to reduce the impacts have been investigated above. The potential impacts are consistent with good oil-field practice/industry best practice and are considered to be broadly acceptable in its current state. Therefore, Woodside considers standard operations appropriate to manage the impacts of light emissions to a level that is broadly acceptable.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 10 No impacts to marine fauna greater than that caused by minimum required light emissions for safe work and navigation. 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. No disruption to the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant	C 10.1 Compliance with the project's Ministerial Conditions on EPBC Referral No. 2008/4605: "During night-time operations external lighting on all vessels will be minimised to that required for safety of navigation and safety of deck operations".	PS 10.1 External lighting on all vessels will be minimised to levels necessary for safety of navigation and safety of deck operations.	MC 10.1.1 Documentation of HSE audit, which includes review of external lighting.
	C 10.2 IMMR vessel crew will be trained in light reduction measures when operating within 20 km of islands between December and April (peak turtle hatchling emergence period is Dec-Mar, with the wedge-tailed shearwater fledgling emergence in Apr).	PS 10.2 IMMR crew will be trained in light reduction measures when operating within 20 km of Islands between December and April.	MC 10.1.2 Crew training records

EPOs, EPSs and MC			
proportion of the population of nocturnal seabirds.	C 10.3 Implement a Seabird Management Plan	PS 10.3 Implementation of the Seabird Management Plan including: • Minimise potential for light attraction. • Standardise and maintain record keeping and reporting of seabird interactions. • Provide procedures on seabird intervention, care and management. • Regulatory reporting requirements of seabird (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 10.3.1 Records demonstrate Seabird Management Plan implemented.
	C 10.4 IMMR vessels to use block-out blinds / curtains on accommodation windows at night between December and April (peak turtle hatchling emergence period is Dec-Mar, with the wedge-tailed shearwater fledgling emergence in Apr).	EPS 10.4 Block out blinds available and used in accommodation quarters of IMMR vessels at night when operating vessels within 20 km of Islands between December and April.	MC 10.4.1 Inspection records show block-out blinds / curtains on vessel windows have been closed at night-time, as required.

6.7 Unplanned Activities (Accidents, Incidents, Emergency Situations)

6.7.1 Quantitative Spill Risk Assessment Methodology

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.

A stochastic modelling scheme was followed in this study, whereby SIMAP was applied to repeatedly simulate the defined credible spill scenarios using different samples of current and wind data. These data samples were selected randomly from an historic time-series of wind and current data representative of the study area. Results of the replicate simulations were then statistically analysed and mapped to define contours of percentage probability of contact at identified thresholds around the hydrocarbon release point.

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

During each simulation, the SIMAP model records the location (by latitude, longitude and depth) of each of the particles (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.

All hydrocarbon spill modelling assessments undertaken by RPS undergo initial sensitivity modelling to determine appropriate time to add to the simulation after the cessation of the spill. The amount of time following the spill is based on the time required for the modelled concentrations to practically drop below threshold concentrations anywhere in the model domain in the test cases. This assessment is done by post-processing the sensitivity test results and analysing time-series of median and maximum concentrations in the water and on the surface.

6.7.1.1 Hydrocarbon Characteristics – Marine diesel oil

Marine diesel oil (MDO) is the hydrocarbon involved in the worst-case credible spill scenario for the Petroleum Activities Program. The characteristics of MDO are as follows:

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. In general, about 6% of the oil mass should evaporate within the first 12 hours (boiling point < 180°C); a further 35% should evaporate within the first 24 hours (180°C

< boiling point < 265°C); and a further 54% should evaporate over several days (265°C < boiling point < 380°C). About 5% of the oil is shown to be persistent. The aromatic content of the oil is about 3%.

The mass balance forecast for the constant-wind case for marine diesel shows that about 41% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface weathers at a slower rate due to comprising the longer-chain compounds with higher boiling points. Evaporation of the residual compounds slows significantly and is then subject to more gradual decay through biological and photochemical processes.

Under the more realistic variable-wind case Figure 6-3, where the winds are of greater strength, entrainment of marine diesel into the water column is indicated to be significant. About 24 hours after the spill, around 72% of the oil mass is forecast to have entrained and a further 24% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds tend to remain entrained beneath the surface under conditions that generate wind waves (about >6 m/s).

The increased level of entrainment in the variable-wind case results in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 2.4% per day with an accumulated total of ~16% after seven days, in comparison to a rate of ~0.2% per day and an accumulated total of 1.3% after seven days in the constant-wind case. Given the large proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons decay and/or evaporate over time scales of several weeks to a few months. This long weathering duration extends the area of potential effect.

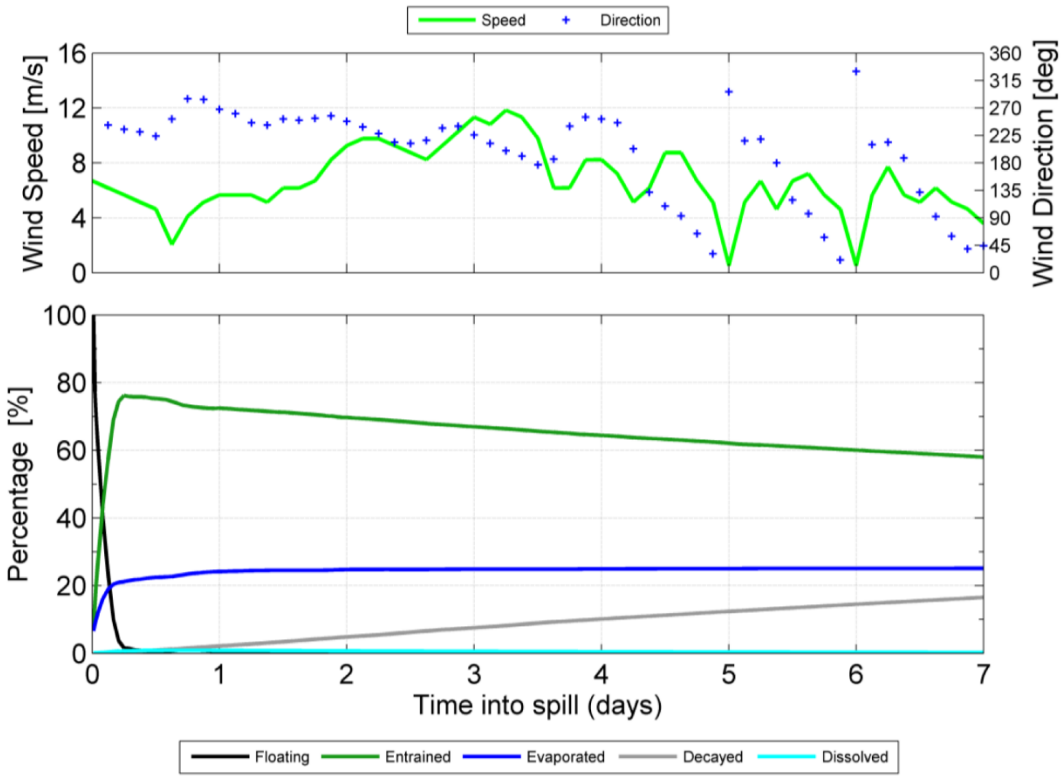

Figure 6-3: Proportional mass balance plot representing the weathering of marine diesel spilled onto the water surface as a one-off release (50 m^3 over one hour) and subject to variable wind at 27°C water temperature and 25°C air temperature.

6.7.1.2 Environment that May Be Affected and Hydrocarbon Contact Thresholds

The outputs of the quantitative hydrocarbon spill modelling are used to assess the environmental consequence by delineating which areas of the marine environment could be exposed to hydrocarbon levels exceeding selected hydrocarbon threshold concentrations if a credible hydrocarbon spill scenario occurred. The summary of the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the "environment that may be affected" (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 a variety of weather and metocean conditions, and the EMBA represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs.

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

The spill modelling outputs are presented as areas that meet threshold concentrations for surface, entrained and dissolved hydrocarbons for the modelled scenarios. Surface spill concentrations are expressed as grams per square metre (g/m^2), with entrained and dissolved aromatic hydrocarbon concentrations expressed as parts per billion (ppb). 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 condensate spills from a loss of well control and loss of marine diesel. 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 and is described below. Each of these hydrocarbon thresholds are presented in Table 6-9.

Table 6-9: Summary of Thresholds Applied to the Quantitative Hydrocarbon spill Risk Modelling Results

Hydrocarbon Type	EMBA				Socio-cultural EMBA
	Surface Hydrocarbon (g/m^2)	Dissolved Hydrocarbon (ppb)	Entrained Hydrocarbon (ppb)	Accumulated Hydrocarbon (g/m^2)	Surface hydrocarbon (g/m^2)
Condensate	10	50	100	100	1
Marine diesel	10	50	100	100	1

Scientific Monitoring

7. A PLANNING AREA FOR SCIENTIFIC MONITORING IS ALSO DESCRIBED IN SECTION 5.8 OF THE OIL SPILL PREPAREDNESS AND RESPONSE MITIGATION ASSESSMENT (

Appendix H). 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.

A scientific monitoring program may be activated following a Level 2 or 3 unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-cultural) for the entire EMBA and in particular, any identified Pre-emptive Baseline Areas (PBAs) for the worst-case credible spill scenario or other identified unplanned hydrocarbon releases associated with the operational activities.

7.1.1 Unplanned Hydrocarbon Release: Vessel collision

Context		
Subsea Support Vessels – Section 3.9	Physical Environment – Section 4.4 Biological Environment – Section 4.5 Protected Places – Section 4.8 Socio-cultural – Section 4.9	Consultation –5

Impacts and Risks Evaluation Summary														
Source of Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Loss of marine diesel from a subsea support vessel		x	x	x	x	x	x	B	3 - Substantial	Highly Unlikely	3	LCS RBA	Tolerable	EPO 11

Description of Source of Risk

Source of risk

MGO (diesel) is stored onboard vessels as a fuel for vessel engines and generators. There will be no bunkering in the offshore Operations Area during operations and so the potential for significant release of hydrocarbons to the marine environment is limited to a loss of bulk storage on a vessel as a result of a collision. The maximum volume likely to be released from a single tank rupture on a typical IMMR vessel is approximately 125 m^3. This volume has been modelled by RPS (2023) using the three-dimensional model SIMAP. The modelling is considered conservative since vessel tanks are typically filled to less than 90% capacity, therefore the maximum volume likely to be released from a typical single IMMR vessel tank rupture is approximately 100 m^3.

Hydrocarbon Characteristics

Diesel fuel is a light petroleum distillate and properties may vary depending on their origin and particular additives, but are generally comprised of moderate concentrations of benzene, toluene, ethylene and xylene (BTEX) and low concentrations of polycyclic aromatic hydrocarbons (PAHs) of low molecular weight (e.g. naphthalene, fluorene and phenanthrene). The specific gravity of diesel ranges from 0.84 to 0.88 g/cm^3 (30 to 32 API) and the pour point varies between -17°C and -30°C. Diesel fuels have a low viscosity of approximately 13c St (at 20°C) and are categorised, using the International Tanker Owners Pollution Federation methods, as light persistent oils.

The modelling included a series of weather tests to illustrate the potential behaviour of diesel when exposed to idealised and representative environmental conditions. The two model tests were under calm wind conditions (constant 5 knots) and under variable weather conditions (4-19 knots), both assuming low seasonal water temperature (27°C) and average air temperature (25°C).

The mass balance forecast for the constant-wind case (Figure 6-4) for diesel shows that approximately 41% of the oil is predicted to evaporate within 24 hours (RPS, 2023). Under these calm conditions, most of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes.

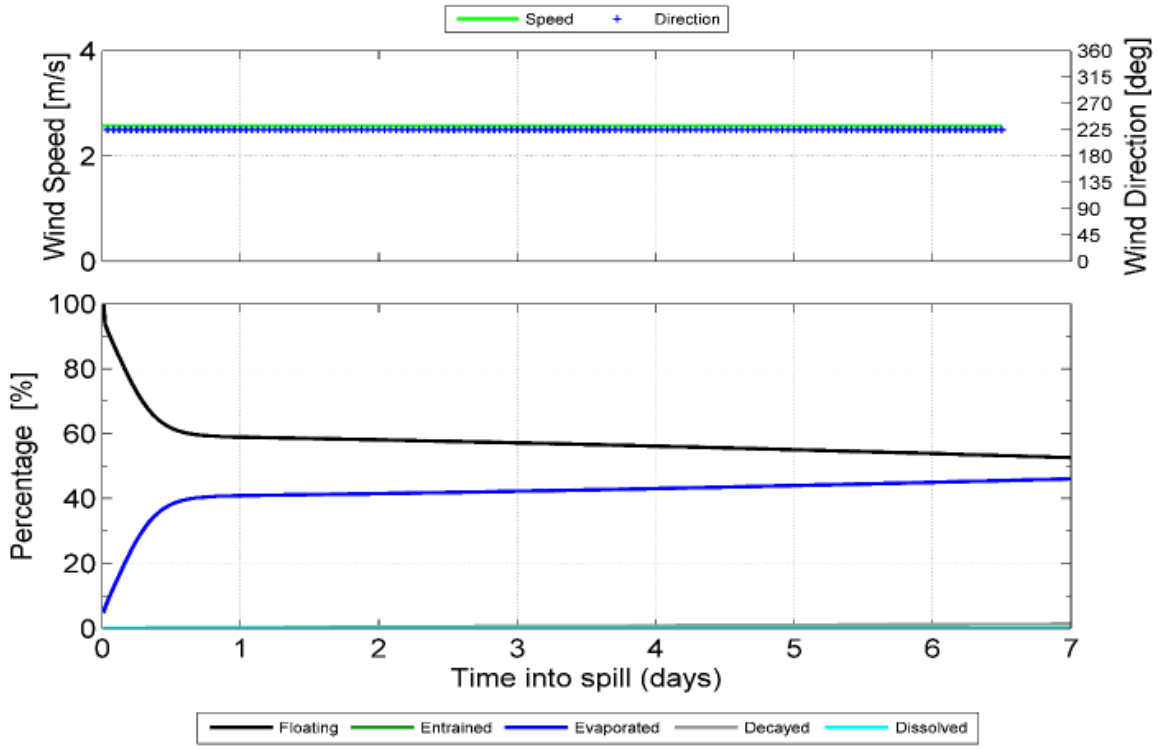

Figure 6-4 Proportional mass balance plot representing the weathering of Marine Diesel spilled onto the water surface as a one-off release (50 m^3) and subject to a constant 5 kn (2.6 m/s) wind at 27°C water temperature and 25°C air temperature.

Under the variable-wind case (Figure 6-5), where the winds are of greater strength, entrainment of 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).

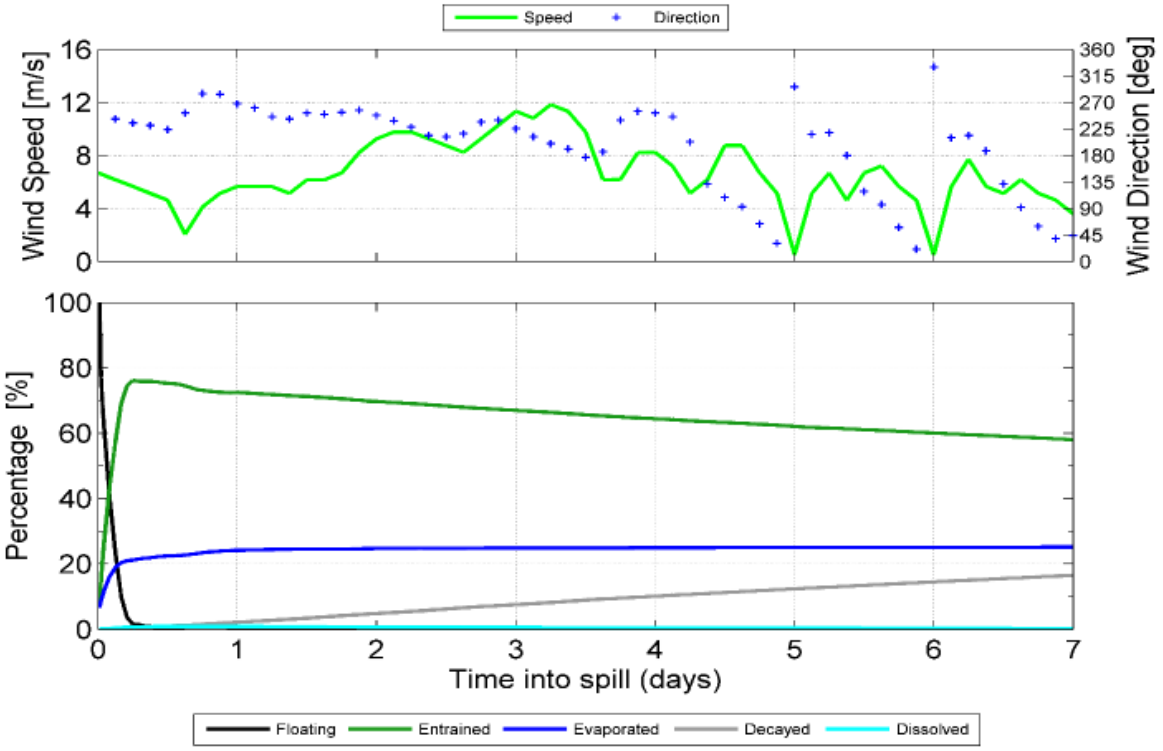

Figure 6-5 Proportional mass balance plot representing the weathering of Marine Diesel spilled onto the water surface as a one-off release (50 m^3) and subject to variable wind at 27°C water temperature and 25°C air temperature.

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 2.4% per day with an accumulated total of ~16% after 7 days, in comparison to a rate of ~0.2% per day and an accumulated total of 1.3% after 7 days in the constant-wind case. Given the large proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons will decay and/or evaporate over time scales of several weeks to a few months. This long weathering duration will extend the area of potential effect, requiring the break-up and dispersion of the slicks and droplets to reduce concentrations below the thresholds considered in this study (RPS, 2023).

If diesel is spilled to sea, the more volatile BTEX components will evaporate or breakdown rapidly leaving behind the PAH components, which evaporate or breakdown more slowly over several days. For the environmental conditions experienced at the offshore operations area, diesel is expected to undergo rapid spreading and this, together with evaporative loss, will result in a relatively rapid slick break up.

Consequence Assessment

Environment that May Be Affected for the credible worst-case diesel spill from a vessel (125 m^3)

The BTEX components in diesel are the main source of toxicity to marine organisms and hence it is generally observed that the toxicity of spilled diesel decreases as the diesel weathers; decreasing from about 8 to 12 ppm for fresh diesel (Neff et al., 2000). A spill of diesel will have an immediate acute impact on the water column biota in the vicinity of the spill origin. Given the water depth throughout the Operational Area (~60-180 m), a surface spill of diesel is not predicted to impact on the seafloor benthos.

Based on literature reviews of oil effects on aquatic birds and marine mammals by Engelhardt (1983), Clark (1984), Geraci and St. Aubin (1988), and Jenssen (1994), the threshold thickness with the potential for lethal impacts to wildlife (megafauna) is 10 µm (≈10 g/m^2). Therefore, the threshold of 10 g/m^2 has been selected for determining the EMBA for diesel. This is considered reasonable, and conservative given the low viscosity of the oil and the low toxicity of the oil.

Stochastic modelling for a spill in the Operational Area (RPS, 2023) predicted that under both metocean conditions (calm and variable) the majority of surface spilled hydrocarbons would most likely be observed in the close proximity of the release location. The modelling results when under calm wind condition predicted approximately 41% evaporating within 24 hours, and no entrainment to occur. Under the variable-wind conditions approximately 72% of the hydrocarbons are predicted to entrain, and 24% to evaporate, within the initial 24 hours, with only a very small residual amount remaining.

The potential EMBA from an unplanned hydrocarbon release (from vessel collision) of 6.5 km centred on the pipeline alignment that was used (Section 4.1), therefore provides a conservative EMBA for potential spill scenarios. The potential sensitive receptors present in the immediate area of the diesel spill will include fish and marine mammals, marine reptiles and seabirds at the sea surface that become coated in diesel or through ingestion. The impact on these sensitive receptors is likely to be negligible and is likely to be limited to a small number of transient individuals, given the distance from the nearest shoreline (12 km is the minimum distance from the expected spill at 10 µm threshold) and as there are no important areas of habitat present in the immediate vicinity. The potential impacts to the key values and sensitivities in the EMBA is described in the following.

Potential Impacts to Key Species and Ecological Systems

Marine Mammals

Whales and dolphins surface to breathe air. They are therefore theoretically vulnerable to exposure to hydrocarbon spill impacts caused by intersecting an area of diesel slick on the sea surface. Whales and dolphins are smooth-skinned, hairless mammals so diesel tends not to stick to their skin and since they do not rely on fur for insulation, they will not be sensitive to the physical effects of exposure to diesel.

Small doses of diesel may cause acute fatal pneumonia in mammals when aspirated. Studies on effects of petroleum vapours on terrestrial mammals and seals showed (in cases of prolonged exposures and high concentrations) absorption of hydrocarbons in organs and other tissues, and damage to the brain and central nervous system (AMSA, 2013). However short-term inhalation of petroleum vapours at concentrations similar to those found in oceanic diesel spills, may not be necessarily detrimental either in terms of structural tissue damage or in terms of respiratory gas exchange.

Ingested hydrocarbons, particularly the lighter fractions, can be toxic to marine mammals. Ingested diesel can remain within the gastro-intestinal tract and be absorbed into the bloodstream and thus irritate and/or destroy epithelial cells in the stomach and intestine.

The way whales and dolphins consume their food may well affect the likelihood of their ingesting diesel. Baleen whales, which skim the surface, are more likely to ingest diesel than toothed whales, which are ‘gulp feeders’. Spilled diesel may also foul the baleen fibres of baleen whales, thereby impairing food-gathering efficiency or resulting in the ingestion of diesel or diesel-contaminated prey. Baleen whales may therefore be vulnerable to diesel if feeding. It should be noted that adult humpback whales, which are seasonally present and relatively abundant in the region, are not thought to be feeding during their migration through the region.

Data captured during the Deepwater Horizon oil spill response efforts showed that bottlenose dolphins, a species known to occur within the EMBA, were subject to adrenal gland disease and dysfunction as a result of the oil spill (Deepwater Horizon Natural Resource Damage Assessment Trustee, 2016).

The strong attraction to specific areas for breeding, feeding or resting may result in individuals coming into contact with hydrocarbons. The nearest such area is Exmouth Gulf, which is used as a resting area by humpback whales during the southern migration and a reproduction area by the Southern Right Whale. Modelling of diesel spill trajectories has indicated diesel would not enter the Gulf.

No information is available regarding the susceptibility or sensitivity of dugongs to diesel spills. Dugongs that come into contact with floating hydrocarbons as they come to the surface to breathe would be at risk from direct contact potentially causing skin lesions and irritation of mucous membranes (such as those in the nose, throat and eyes).

Marine Reptiles

Turtles: There is little documented evidence of the effect of diesel on turtles. Should turtles make contact with a spill, the impact is likely to include oiling of the body as well as irritations caused by contact with eyes, nasal and other body cavities and possibly ingestion or inhalation of toxic vapours (Jones, 1986). Within the EMBA turtles may be exposed to diesel, in the event of a large spill occurring, through contact with a surface slick. This can lead to the following problems for turtles (AMSA, 1998):

- Digestion/absorption of diesel through food contamination or direct physical contact, leading to damage to the digestive tract and other organs; and
- Irritation of mucous membranes (such as those in the nose, throat and eyes) leading to inflammation and infection.

Turtles are vulnerable at beach nesting sites during peak nesting season ranging between October to February for Flatback, Green, Hawkbill and Loggerhead turtles. However, areas where IMMR activities may occur are further from nesting beaches than the maximum distance trajectory analysis indicates surface hydrocarbons above impact threshold levels are expected to travel.

The very short duration of activities and the remote likelihood of a large spill occurring reduces the risk of impacts to turtle’s populations in the region.

No information is available regarding the susceptibility or sensitivity of sea snakes to diesel spills. Sea snakes’ surface to breathe air and may be vulnerable to diesel spill impacts.

Fish

The toxicity of dissolved hydrocarbons and dispersed diesel to fish species has been the subject of a large number of laboratory studies. However, fish mortalities are rarely observed to occur as a result of diesel spills. This has generally been attributed to the possibility that pelagic fish are able to detect and avoid waters underneath diesel spills by swimming away from the affected area. Where fish mortalities have been recorded, the spills have occurred in sheltered bays.

It is not known whether whale sharks would be able to detect and avoid diesel slicks as has been shown for other fish species. Whale sharks occasionally feed on plankton near or on the water surface and it is possible that they may come into direct contact with diesel, or even ingest diesel if a large-scale spill occurred when they are seasonally present.

Seabirds

Birds which congregate in large numbers on the sea or shorelines to breed, feed or moult are particularly vulnerable to hydrocarbon pollution. A seabird's immediate response to oiling is to preen itself. It has been shown that seabirds are able to preen themselves to remove small amounts of adhered hydrocarbon (Birkhead et al., 1973). But, as it preens at its feathers, the bird also inhales or swallows toxic compounds that may damage its liver, lungs, kidneys, intestines, and other internal organs causing lethal or sub-lethal effects (Piatt et al., 1990). The effect of diesel on the different life stages of seabirds has been the subject of several studies. Diesel ingested by nesting birds may reduce the fertility of eggs that are laid (Grau et al., 1977).

Within the EMBA seabirds may be exposed to diesel, in the event of a diesel spill occurring, through feeding or contact with diesel adhered to other surfaces. Many seabirds found in the EMBA feed by picking or snatching prey from, at or near the water surface (for example frigate birds, noddies) or while paddling on the water (wedge-tailed shearwaters and petrels are examples) and in doing so can contact diesel on the sea surface. Accounts of seabird mortalities from spill events indicate that seabirds with these types of feeding habits are the most likely to be severely affected.

The potential exists for mortalities of seabirds in the event of a large (100 m^3) diesel spill occurring. The species with highest potential to be impacted are those that feed at sea near or on the water surface. Several of these species notably; the wedge-tailed shearwater and petrels have relatively long fledgling periods, low rates of reproduction and are under stress from loss of habitat in other parts of their migratory range. Consequently, impacts from a diesel spill event on local populations of these seabirds is possible but limited by the relatively small extent of the EMBA (2 km) and the rapid degradation and hence toxicity of diesel with 24 – 48 hours.

Ecosystems

Plankton and Pelagic Ecosystem Processes: the effects of hydrocarbons on plankton have been well studied in controlled laboratory and field situations. The different life stages of a species often show widely different tolerances and reactions to diesel pollution. Usually the eggs, larval and juvenile stages will be more susceptible than the adults.

Post-spill studies on plankton populations are few, but those that have been done have shown either no effects or temporary minor effects (Kunhold, 1978). The prime reason put forward to explain the lack of observed effects is that many marine species produce very large numbers of eggs and larval stages to overcome natural losses (such as through predation by other animals; adverse hydrographical and climatic conditions; or failure to find a suitable habitat and adequate food). Therefore, it is unlikely that any localised losses of eggs or larvae caused by a single diesel spill event in the open ocean, such as from the proposed activities, would have a discernible effect on the size or health of future adult populations in the area.

A possible exception to this would be if the diesel spill slick were to coincide with, and be transported to, a mass synchronous spawning event, such as that which is known to occur for corals over a four to five-day period in March/April (Simpson, 1985). Recently spawned gametes and larvae would be especially exposed to diesel spill effects since they are generally positively buoyant and would be exposed to surface slicks. The potential impact of this exposure is likely to be mitigated by the very low likelihood of a large spill; a) occurring and b) reaching the nearshore waters containing coral reefs where spawn would occur in significant density.

Fringing Reef Ecosystem: Experimental studies and field observations have found all species of corals to be sensitive to the effects of hydrocarbons although there are considerable differences in the degree of tolerance between species (Jackson et al. 1989). The effect of diesel on corals range from short or long-term sub-lethal effects to irreversible tissue necrosis and death. The timing of a diesel spill event in relation to other environmental stresses, such as ambient temperature, or reproductive stage could also have significance in that corals are likely to be more sensitive to diesel spill events at times of physiological stress. The potential impact of this exposure is mitigated by the very low likelihood of a large spill; a) occurring and b) reaching the nearshore waters where coral reefs occur.

Macroalgae: The effect of hydrocarbons on algae is largely dependent on the degree of direct exposure and how much of the hydrocarbon adheres to the algae. The morphological features of the algae, such as the presence of a mucilage layer or the presence of fine 'hairs' will influence the amount of hydrocarbon that will adhere to the algae. A review of field studies conducted after spill events by Connell and Miller (1981) indicated a high degree of variability in level of impact, but in all instances the algae appeared to be able to recover rapidly from even very heavy oiling. They attributed the rapid recovery of algae to the fact that for most algae new growth is produced from near the base of the plant while the distal parts (which would be exposed to the diesel contamination) are continually lost. The potential

impact of diesel exposure is mitigated by the very low likelihood of a large spill; a) occurring and b) dispersing into the waters where macroalgae occur.

Potential Effect on Key Ecological Features

A change in habitat may occur due to a change in water or sediment quality that could impact KEFs. The Operational Area overlaps with the intersects with the Ancient Coastline at 125 m Depth Contour and Canyons linking the Cuvier Abyssal Plain and a further 3 KEFs have the potential to intersect with an unplanned release of hydrocarbons.

The values and sensitivities of these KEFs relate to seafloor features, and demersal fish species (i.e. that live close to the seafloor). Therefore, water depth can determine whether any in-water hydrocarbons can potentially interact with these values and sensitivities. As MDO typically remains in the top ~20 m of the water column and rapidly weathers, there is no potential for in-water hydrocarbons to intersect with the seafloor and demersal values.

Key ecological features (KEFs) that may be affected in the unlikely event of a worst-possible case spill scenario are:

- Continental Slope demersal fish communities
- Demersal fish live and feed on or near seabed. The Commonwealth Marine Environment Report Card notes that the demersal fish species occupy two distinct demersal community types (biomes) associated with the upper slope (water depth of 225 to 500 metres) and the mid-slope (750 to 1,000 metres).
- Commonwealth waters adjacent to Ningaloo Reef

The predicted trajectory and fate in the unlikely event of a worst-possible case release (without any mitigation measures) indicates that Commonwealth waters within the Ningaloo Marine Park (NMP) would not be exposed to the surface spill resulting from a vessel tank rupture. On this basis, a worst-possible case release of diesel is not predicted to have any effects on environmental assets within the NMP.

The potential impact to seabirds and marine biota that intercept the surface, such as marine mammals, is discussed in the preceding Sections.

Exmouth Plateau and Ancient Coastline at 125 m Depth Contour

The predicted trajectory and fate of hydrocarbons in the unlikely event of a large diesel spill within State waters suggests contact with the seabed of the Exmouth Plateau or the ancient coastline at 125 m depth contour is not expected.

Canyons linking the Cuvier Abyssal Plain

The seafloor features of this KEF may promote enhanced upwelling and associated productivity.

Potential Effect on Socio-economic Factors

Tourism

Tourism would likely be adversely affected if a visible surface slick entered areas of tourism activity. However, the offshore operations area and immediate surrounds, including the EMBA indicated by spill modelling, does not have the tourism attractions of areas closer to Exmouth or along the Ningaloo coast. The very short persistence of diesel on the surface following a spill would mitigate potential impacts.

Fisheries

It is possible that commercial and recreational fishing activities may be hampered if fisheries are restricted from entry to an affected area, however the area potentially affected represents a very small part of available fishery zones and the short duration that diesel would persist limits the potential for significant impacts.

Shipping

The impact on shipping in the event of 125 m^3 diesel spill is likely to be limited to the potential for minor modification of shipping routes to avoid the spill. Shipping operations may be affected by spill response efforts by way of a 'Notice to Mariners' being issued to avoid the area, leading to the potential diversion from normal shipping routes.

Petroleum Activities

In the event of large diesel spill petroleum production operations in the region would likely remain unaffected unless a surface slick was within near vicinity and considered to represent a safety hazard at which time the likely response would be to temporarily cease production activities. There are no petroleum operations within the spill EMBA that would likely be affected.

Consequence Assessment Summary

A summary of the range of environmental receptors that may be impacted from a credible worst-case hydrocarbon spill scenario of 125 m^3 diesel from a vessel collision is presented in Table 6-10, as identified by the stochastic spill modelling studies.

Table 6-10: Environment that May Be Affected – Key receptor locations / sensitivities that are predicted to be contacted by an instantaneous release of marine diesel

Environmental Setting	Receptor	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions (Woodside's Risk Management Procedure)																													Probability of hydrocarbon contact and fate (%)					
		Physical		Biological																					Socio-cultural and Cultural					Socio–cultural EMBA		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 Reefs	Offshore Filter feeders and / or Deepwater Benthic Communities	Nearshore Filter Feeders	Sandy Shores	Estuaries / Tributaries / Creeks / Lagoons (including mudflats)	Rocky Shores	Cetaceans – Migratory Whales	Cetaceans – Dolphins and Porpoises	Dugongs	Pinnipeds (Sea Lions / Fur Seals)	Marine Turtles (Foraging and Internesting Areas and Significant Nesting Beaches)	Sea Snakes	Whale Sharks	Sharks and Rays	Seabirds and Migratory Shorebirds	Pelagic Fish Populations	Demersal Fish Populations	Fisheries - Commercial	Fisheries - Traditional	Tourism and Recreation	Protected Areas / Heritage – European and Indigenous / Underwater Cultural Heritage	Offshore Oil and Gas Infrastructure (topside and subsea)	Surface Hydrocarbons (1 – 10 g/m^2)	Accumulated hydrocarbons (10-100 g/m^2)	Surface Hydrocarbons (≥10 g/m)	Entrained Hydrocarbons(≥100 ppb)	Dissolved Hydrocarbons (≥50 ppb)	Accumulated Hydrocarbons (> 100 g/m^2)
Offshore[47]	Montebello AMP	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					1		
	Gascoyne AMP	✓	✓												✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓				16	1.5	
	Ningaloo MP	✓	✓	✓			✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					16.5	2	
Submerged Reefs	Ningaloo Reef	✓	✓	✓			✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					1.5		
	North West Reef	✓	✓	✓			✓	✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓						1		
Islands	Barrow Is	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓				0.5		
	Barrow Is MMA	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓				0.5		

[47] Note: hydrocarbons cannot accumulate on open ocean, submerged receptors, or receptors not fully emergent

Environmental Setting	Receptor	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions (Woodside's Risk Management Procedure)																													Probability of hydrocarbon contact and fate (%)					
		Physical		Biological																						Socio-cultural and Cultural										
		Water Quality	Sediment Quality	Marine Primary Producers			Other Communities / Habitats								Protected Species									Other Species							Socio–cultural EMBA		EMBA			
		Open Water (Pristine)	Marine Sediment (Pristine)	Coral Reef	Seagrass Beds / Macroalgae	Mangroves	Spawning / Nursery Areas	Open water – Productivity / Upwelling	Non-biogenic Reefs	Offshore Filter feeders and / or Deepwater Benthic Communities	Nearshore Filter Feeders	Sandy Shores	Estuaries / Tributaries / Creeks / Lagoons (including mudflats)	Rocky Shores	Cetaceans – Migratory Whales	Cetaceans – Dolphins and Porpoises	Dugongs	Pinnipeds (Sea Lions / Fur Seals)	Marine Turtles (Foraging and Internesting Areas and Significant Nesting Beaches)	Sea Snakes	Whale Sharks	Sharks and Rays	Seabirds and Migratory Shorebirds	Pelagic Fish Populations	Demersal Fish Populations	Fisheries - Commercial	Fisheries - Traditional	Tourism and Recreation	Protected Areas / Heritage – European and Indigenous / Underwater Cultural Heritage	Offshore Oil and Gas Infrastructure (topside and subsea)	Surface Hydrocarbons (1 – 10 g/m²)	Accumulated hydrocarbons (10-100 g/m²)	Surface Hydrocarbons (≥10 g/m)	Entrained Hydrocarbons(≥100 ppb)	Dissolved Hydrocarbons (≥50 ppb)	Accumulated Hydrocarbons (> 100 g/m²)
	Muiron Is	✓	✓	✓	✓		✓					✓		✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓					0.5		
	Muiron Is MMA	✓	✓	✓	✓		✓					✓		✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		0.5	0.5	0.5	2		
	Sunday Is	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					0.5		
Mainland (nearshore waters)	Exmouth	✓	✓		✓		✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓			0.5		1.5		
	Ningaloo Coast WH	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		2	0.5	1	16.5	2	
	Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		0.5	0.5		5.5	0.5	
	Cape Range NP		✓	✓			✓				✓	✓		✓					✓	✓		✓	✓	✓	✓			✓	✓					1		

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***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 procedures) 2016; • Marine Order 27 (Safety of navigation and radio equipment) 2016 • Marine Order 30 (Prevention of Collisions) 2016.	F: Yes CS: Minimal cost. Standard practice.	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
Develop SIMOPS plan if more than one Woodside contracted vessel is operating in the Operational Area at any time.	F: Yes CS: Minimal cost. Standard practice.	SIMOPS plans between Woodside operated vessels in the Operational Area will ensure simultaneous activities/ operations are conducted safely.	Benefits outweigh cost sacrifice	Yes C 11.1
Maintain environmental incident response equipment to enact the Macedon First Strike Plan	F: Yes CS: Minimal cost. Standard practice.	Preparedness for oil spill response reduced the magnitude of potential consequences	Benefits outweigh cost sacrifice	Yes C 11.2
In the event of a hydrocarbon release emergency response activities implemented in accordance with the Macedon Oil Pollution First Strike Plan	F: Yes CS: Minimal cost standard practice	Rapid response in line with pre-prepared response plan will reduce the scale of potential impacts.	Control based on legislative requirement – must be adopted.	Yes C 11.3
Vessels will have current MARPOL compliant Shipboard Oil Pollution Emergency Plan (SOPEP) and Shipboard Marine Pollution Emergency Plan (SMPEP - for noxious liquid) – the	F: Yes CS: Minimal cost. Standard practice	Compliance with MARPOL Annex I, minimises any potential impacts from any unplanned releases.	Control based on legislative requirement – must be adopted.	Yes C 11.4

latter may be combined with a SOPEP.				
Good practice				
Arrangements supporting the activities in the First Strike Plan will be tested to ensure the First Strike Plan can be implemented as planned.	F: Yes CS: Minimal cost. Standard practice.	Testing ensure procedures are implementable and personnel are familiar with requirements.	Benefits outweigh costs.	Yes C 11.5
Professional Judgement – Eliminate				
None identified				
Professional Judgement – Substitute				
None identified				
Professional Judgement – Engineering solution				
None identified				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of accidental diesel spill. As no reasonable additional / alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, associated with Vessel Collision within the Operational Area, the impacts and risks are considered ALARP, and the controls demonstrate that the EPOs are met.				

Demonstration of Acceptability
Vessel collision has been evaluated as having a 'tolerable" level of risk rating. As per Section 2, Woodside considers 'tolerable' risk ratings as broadly acceptable if the adopted controls are implemented. The consequence assessment has determined that, given the adopted controls, an accidental diesel spill represents a tolerable risk rating. Opportunities to reduce diesel spill impact and risks are employed through standard practice such Marine Order 21, 27, and 30. The adopted controls are considered good oil-field practice/industry best practice and meet relevant Commonwealth and WA State regulatory requirements. The potential impacts and risks are considered tolerable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of accidental diesel spill to an acceptable level.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 11 No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.	C 1.1 Refer to Section 6.6.1	PS 1.1 Refer to Section 6.6.1	MC 1.1.1 Refer to Section 6.6.1
	C 11.1 Develop SIMOPS plan if more than one Woodside contracted vessel is operating in the Operational Area at any time.	PS 11.2 A SIMOPS plan is developed	MC 11.2.1 Records demonstrate SIMOPS plan was developed and implemented

EPOs, EPSs and MC			
	C 11.2 Maintain environmental incident response equipment to enact the Macedon First Strike Plan.	PS 11.2 Approved First Strike Plan in place and equipment tested as required.	MC 11.2.1 Records demonstrate that the First Strike Plan is in place and incident response equipment is maintained as required.
	C 11.3 In the event of a hydrocarbon release emergency response activities are implemented in accordance with the Macedon Oil Pollution First Strike Plan	PS 11.3 First strike plan is implemented	PS 11.3 Records demonstrate that first strike plan is implemented
	C 11.4 Vessels will have current MARPOL compliant Shipboard Oil Pollution Emergency Plan (SOPEP) and Shipboard Marine Pollution Emergency Plan (SMPEP - for noxious liquid) – the latter may be combined with a SOPEP.	PS 11.4 SOPEP is implemented	MC 11.4.1 Records demonstrate implementation of SOPEP
	C 11.5 Arrangements supporting the activities in the First Strike Plan will be tested to ensure the First Strike Plan can be implemented as planned	PS 11.5.1 Exercises/tests will be conducted in alignment with the frequency identified in Table 8-8.	MC 11.5.1 Testing of arrangement records confirm that emergency response capability has been maintained.
		PS 11.5.2 Woodside's procedure demonstrates a minimum level of trained personnel, for core roles in the OPEP, are maintained.	MC 11.5.2 Emergency Management dashboard confirms that minimum level of personnel trained for core OPEP roles are available.

7.1.2 Unplanned Hydrocarbon Release: Loss of Well Containment

Context		
Field Layout and Description – Section 3.6	Physical Environment – Section 4.4 Biological Environment – Section 4.5 Protected Places – Section 4.8 Socio-cultural Environment – Section 4.9	Consultation - 5

Impacts and Risks Evaluation Summary

Source of Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Release of hydrocarbons from loss of subsea well containment			x					A	2 - Measurable	Highly Unlikely	0.9	LCS RBA	Tolerable	EPO 12

Description of Source of Risk

Background

The Macedon field production system comprises of 4 (and contingency for one new production well) subsea vertical gravel packed gas production wells tied into a subsea pipeline to the Macedon onshore gas plant. Macedon gas has a very low condensate yield. All wells are identically designed, with differences primarily due to minor depth changes and reservoir inflow performance. The most productive well in the field is Macedon 7, and as such this well has been selected for analysis of worse case LOWC scenarios.

Each well is completed with a 7 inch tubing string, fitted with a subsurface safety valve (SCSSV) at around 250 m depth. The SCSSV is held open via hydraulic control line pressure from surface, which is designed to auto close upon loss of control line pressure. The reservoir section is completed using an open hole gravel pack for sand control at depths of about 930 m to 990 m below sea level. The wells are located in 160 m to 180 m water depth. Each well has a horizontal subsea Xmas tree which houses a master valve and wing valve in series which are similarly hydraulically functioned and both are designed to auto close upon loss on control line pressure.

Well Design and well integrity management requirements dictate that a primary barrier envelope and a secondary barrier envelope is maintained at all times. The establishment and maintenance of a barrier envelope is essential to prevent the unplanned escape of fluid from the well. The presence of additional barrier elements and barrier envelopes beyond the primary and secondary provides improved redundancy.

The Macedon Subsea Tree critical valves and subsurface safety valves are function tested at 12 month intervals and leak off tested at 24 month intervals. The performance standard acceptance criteria for routine tests are adopted from API RP14C/H and API STD 6AV1. The acceptable rate of leakage is 15scf/min leak rate as defined by pressure build up. All Macedon barrier Valves passed this Criteria on January 2021 and have done so since start of production.

Source of risk

For there to be a well blowout, there would need to be a concurrent loss of the subsea tree (through an anchor drag or similar unplanned event) combined with a failure of the SCSSV. The SCSSV is designed to close when hydraulic signal is lost and operates independently of the subsea trees. However it is credible for there to be scale or corrosion debris on the sealing surface or the actuation mechanism causing full closure of the SCSSV to fail. A loss of the subsea tree combined with a full failure of the SCSSV to close may render the well flowing unrestricted to the seabed. To quantify the release rate, a nodal analysis calculation has been performed for the Macedon 7 well using Petroleum Experts PROSPER software. The release rate is that for a flowing well head pressure equivalent to 156 m sea water depth (15.6 barg). The flow rate for the well would continue until such a time as a relief well could be drilled and the

well killed. Over this timeframe there is no significant reservoir depletion expected, and as such the release rate has been treated as constant for simplification.

The calculated release rate for Macedon 7 LOWC is presented in Table 6-11.

Table 6-11: Loss of well control– calculated release volumes

	Daily release rate	Cumulative release (69 days)
Gas	142 MMscf	9 798 MMscf
Condensate	5.7 STB	393 STB

Woodside has assessed the minimum time to execute an emergency relief well including rig mobilisation and completed indicative relief well timings in the WOMP as 69 days. These include the planning for:

- Mobilise Rig (Assumed from SE Asia Worst Case). Rig Acquisition includes identify candidate rig, suspend other operators operation and pull anchors
- Drill to likely intercept point (9 5/8" production shoe) timings based on timings for typical offshore Australia well, plus 25% contingency
- Well kill assumes intercept achieved on 3rd attempt with each intercept cycle taking 4 days based on Engineer's best judgement
- Total estimated duration from well blowout to well killed

Timings assume that if a stimulation vessel or supply vessel mounted pumping spread is required for well kill, the mobilisation time occurs concurrently with the rig mobilisation and drilling of the relief well.

While the LOWC scenario is considered the worst-case discharge, it is also assessed to be highly unlikely due to controls that are in place. For this reason, the time to kill the well blowing out and stop any potential discharge, has not been provided in further definition, and relief well operations (69 days) would be conducted as per standard MACPN-SO-0003 WOMP practices accepted by NOPSEMA (02 May 2023).

Risk Analysis and ALARP Tools

Woodside has a good history of implementing industry standard practice in well design and construction. In the company's recent history, it has not experienced any well integrity events that have resulted in significant releases or significant environmental impacts. Woodside has never experienced a worst-case loss of well containment in its operational history.

Likelihood

In accordance with the Woodside PetDW Risk Matrix, a worst-case LOWC has been defined as a 'highly unlikely' event and aligns with a frequency of 'not likely to occur within a 50-year period'. Information to support this likelihood determination is outlined below.

Review of industry statistics indicates that the probability of a loss of well containment for production wells is low (10.6% of blowouts) relative to other activities in other hydrocarbon provinces (Gulf of Mexico and the North Sea), such as exploration drilling (31.5% of blowouts), development drilling (23.6% of blowouts) and well workovers (20.5% of blowouts) (SINTEF 2017).

Consequence Assessment

Environment that May Be Affected

If the worst case credible well loss of containment occurred, this could release up to 142 MMscf per day of gas and approximately 5.7 STB per day of condensate (less than 1 m^3). The release would rapidly undergo dilution and dispersion, with effects localised to the immediate area and water column surrounding. In the very rare event of a full tree rupture, the wells can be shut in thereby preventing any further release of gas from the well field.

Samples of gas from Macedon wells are more common than samples of condensate. This was confirmed during 2014 flow sales gas sample and 2012 well flow back to rig; the sample was so dry there was no recovery of condensate (during 8 hrs) at the low flash pressure of the separator. In both cases, there was not enough volume in sample to undertake any condensate analysis.

Consequence Assessment

Pelagic fish, cetaceans and marine reptiles are unlikely to remain in a location affected by a spill for long enough to be exposed to lethal concentrations. Plankton entrained in the spill could be impacted; however, due to the small volumes, and the rapid dilution and dispersal that will result at the oceanic location, the environmental effects will be temporary and localised, with significant impacts not expected owing to the small area of impact relative to the widespread distribution of receptors.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Maintain well mechanical integrity to contain hydrocarbons within the well envelope	F: Yes CS: Minimal cost. Standard practice.	Maintaining scheduled barrier tests and regular inspection operations are the means of maintaining barrier integrity.	Benefits outweigh cost sacrifice.	Yes C 12.1
Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition	F: Yes CS: Minimal cost. Standard practice.	Maintaining scheduled barrier tests and regular inspection operations are the means of maintaining barrier integrity.	Benefits outweigh cost sacrifice.	Yes C 12.2
Maintain environmental incident response equipment to enact the Macedon First Strike Plan	F: Yes CS: Minimal cost. Standard practice.	Preparedness for oil spill response reduced the magnitude of potential consequences	Benefits outweigh cost sacrifice	Yes C 11.2
Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011: Accepted Well Operations Management Plan (WOMP)	F: Yes CS: Minimal cost. Standard practice.	The WOMP demonstrates that the risks to well integrity are managed in accordance with sound engineering principles, standards, specifications, and good oilfield practice. It describes the systems that are in place to ensure well design and integrity is managed for the well lifecycle, thus contributing to management of associated potential environmental consequences of well integrity events.	Control based on legislative requirement – must be adopted.	Yes C 12.3

Good practice				
In the event of a hydrocarbon release emergency response activities implemented in accordance with the Macedon Oil Pollution First Strike Plan	F: Yes CS: Minimal cost. Standard practice.	Rapid response in line with pre-prepared response plan will reduce the scale of potential impacts.	Control based on legislative requirement – must be adopted.	Yes C 11.3
Professional Judgement – Eliminate				
None identified.				
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
None identified.				

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood unplanned hydrocarbon release as a result of a loss of well containment.

The principle of inherent safety and environmental protection is based on the prevention of the event through design of well integrity and ensuring the wells are operated within their design envelope through operating practices and assurance through maintenance and inspection. If hydrocarbon loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation are specified and assured through implementing the Macedon WOMP.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of well intervention activities, it is considered that the risk associated with Wells Loss of Containment at Macedon is managed to ALARP, and the controls demonstrate the EPOs are met.

Demonstration of Acceptability

Acceptability Statement

The risk assessment has determined that, given the adopted controls, loss of well containment represents a measurable impact to water quality. Further opportunities to reduce the impacts have been investigated above. The adopted controls are considered good oil-field practice/industry best practice. The potential impacts are considered tolerable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of subsea activities to a level that is tolerable.

EPOs, EPSs and MC

Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 12 No release of hydrocarbons to the marine environment due to well loss of containment.	C 12.1 Maintain well mechanical integrity to contain reservoir fluids within the well envelope	PS 12.1 Integrity will be managed in accordance with Subsea Facilities and Pipeline Integrity Management Plan.	MC 12.1.1 Records demonstrate compliance with Subsea Facilities and Pipeline Integrity Management Plan.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 12.2 Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the subsea equipment and the wells in a safe condition	PS 12.2 Safety shutdown systems will be managed in accordance with Safety Shutdown System Critical Equipment Performance Standard to: • Perform emergency shutdown functions necessary to safeguard the process and related utility systems from escalation due to an upset condition beyond safety limits. • This is achieved by: • Isolation of sections of the production process and related equipment; shutdown of related utility systems; de-energising hazardous electrical power; and initiation of alarms.	MC 12.2.1 Records demonstrate compliance with Safety Shutdown System Performance Standard.
	C 12.3 Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011: Accepted WOMP.	PS 12.3 An accepted WOMP is implemented, and well integrity notification and reporting is undertaken in accordance with the Regulations (as applicable).	MC 12.3.1 Acceptance letter from NOPSEMA demonstrates acceptance of the WOMP. Records demonstrate applicable NOPSEMA notification and reporting.
	C 11.2 Refer to Section 7.1.1	PS 11.2 Refer to Section 7.1.1	MC 11.2.1 Refer to Section 7.1.1
	C 11.3 Refer to Section 7.1.1	PS 11.4 Refer to Section 7.1.1	MC 11.4.1 Refer to Section 7.1.1
	C 11.5 Refer to Section 7.1.1	PS 11.5.1 PS 11.5.2 Refer to Section 7.1.1	MC 11.5.1 MC 11.5.2 Refer to Section 7.1.1

7.1.3 Unplanned Hydrocarbon Release: Subsea infrastructure

Context		
Field Layout and Description – Section 3.6	Physical Environment – Section 4.4 Biological Environment – Section 4.5 Protected Places – Section 4.8 Socio-cultural – Section 4.9	Consultation –5

Impacts and Risks Evaluation Summary

Source of Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Release of hydrocarbons resulting from loss of containment from subsea infrastructure.		x	x	x	x	x	x	B	2 - Measurable	Unlikely	3	LCS RBA CV SV	Tolerable	EPO 13

Description of Source of Risk

In the unlikely event of leaking or rupture of subsea wet gas pipeline or umbilicals during operations, there is the potential for the release of production fluids (including hydrocarbons) or of chemicals (condensate, methanol, biocide, control fluid) to the marine environment. A release from the Macedon gas pipeline would involve a gas comprised almost entirely of methane (94%) and nitrogen (5%), with any hydrocarbons that could form a condensate remaining in vapour phase. Any liquid hydrocarbons on the sea surface are unlikely at detectable volumes. In the unlikely event of a pipeline rupture, the wells can be shut in thereby preventing any further release of gas and condensate from the well field through the pipeline.

At any one time the pipeline contains 2,021,031 m^3 of methane gas, 0.5 m^3 of entrained condensate and <20 m^3 of injected condensate. In the highly unlikely event of a pipeline rupture, the volume of releases would be less than quoted.

Consequence Assessment

Impacts to seabed biota in the vicinity of the pipeline are negligible in the absence of any significant habitat along the pipeline route. The amount of GHG emissions from a worst case pipeline release is equivalent to around 462 tonnes of carbon dioxide (eCO_2) or 0.3% of the estimated maximum annual GHG emitted by Macedon Gas Plant.

There are relatively small volumes of fluids in the offshore umbilical (combined total <200 m^3) with 60 m^3 of methanol, 26 m^3 of corrosion inhibitor and 116 m^3 of well control fluid in the umbilical line between the onshore gas plant and the subsea manifold in the Field. The AMON line has previously been used for tree testing using methanol. The calculated volume of the AMON line is 27 m^3. At times the AMON line may be used to continually inject stabilised condensate at a rate of approximately 15 m^3/day into the wet gas pipeline. Steady state condensate hold up in the wet gas pipeline during condensate injection is estimated to be 20 m^3. Unplanned leaks/spills of stabilised condensate from the umbilical were assessed as ranging from minor leaks (continuous discharge of ~1 m^3/day up to a maximum of 14 m^3 over 2 weeks until detection), up to a maximum of 30 m^3 for an instantaneous release resulting from umbilical rupture (e.g. anchor damage (external party)).

In the event that the umbilical ruptures, which is considered extremely unlikely given the integrity of fabrication, dilution will be high and effects localised to the release point.

Methanol is highly biodegradable in water (half-life of 24 hours) and has a non-CHARM rating of “E”, the lowest environmental impact rating under the OCNS. The active compounds in the corrosion inhibitor (ethylene glycol and 2-butoxyethanol) will be rapidly diluted within a very localised area, rapidly biodegrade and will not bioaccumulate. The

well control fluid is used for valve actuation (i.e. is intended for marine discharge) with an OCNS non-CHARM rating of "D" and would result in low environmental impact if there was an unplanned release.

In the event of an umbilical rupture, low volumes of condensate could be released to the environment (up to a maximum of 30 m^3 for an instantaneous release). Condensate is considered a light hydrocarbon (Group I hydrocarbon under the AMSA classification (AMSA, 2005)) and when released to the marine environment would undergo rapid spreading and evaporative loss in warm waters. In the event of a subsea release, as condensate is more buoyant than water, it will rise to float on the sea surface. However, given the low release volumes, dispersal from subsea currents, and evaporation and spreading on the sea surface, it is predicted that the condensate will not be visible on the sea surface. Any condensate that does reach the sea surface is not predicted to reach concentrations that would cause toxic effects to marine fauna.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation Codes and Standards				
Integrity Management Plan, which drives the inspection program to identify integrity issues	F: Yes CS: Minimal cost. Standard practice.	Can significantly reduce the potential consequences of an incident.	Benefits outweigh cost sacrifice	Yes C 13.1
Subsea infrastructure are shown on AHO marine charts	F: Yes CS: Minimal cost. Standard practice.	Reduces the likelihood of unplanned interactions with subsea infrastructure.	Benefits outweigh cost sacrifice	Yes C 1.2
Maintain well mechanical integrity to contain reservoir fluids within the well envelope	F: Yes CS: Minimal cost. Standard practice.	Significantly reduce the potential consequences of an incident.	Benefits outweigh cost sacrifice.	Yes C 12.1
Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition	F: Yes CS: Minimal cost. Standard practice.	Can significantly reduce the potential consequences of an incident.	Benefits outweigh cost sacrifice.	Yes C 12.2
Maintain environmental incident response equipment to enact the Macedon First Strike Plan	F: Yes CS: Minimal cost. Standard practice.	Preparedness for oil spill response reduced the magnitude of potential consequences	Benefits outweigh cost sacrifice	Yes C 11.2
Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the Macedon Pipeline to; • identify hazards associated with	F: Yes CS: Minimal cost. Standard practice.	Reduces the likelihood of a major loss of containment from the pipeline	Benefits outweigh cost sacrifice	Yes C 13.2

pipeline operations that have the potential to cause a loss of containment; • provide a detailed description for each pipeline; • detail assessment of loss of containment risks; and • describe the physical barriers and the safety management systems identified as being required to reduce the risk to personnel associated with a loss of containment to ALARP; • thus contributing to management of associated potential environmental consequences of pipeline related losses.				
Good practice				
None identified.				
Professional judgement – Eliminate				
None identified.				
Professional judgement – Substitute				
None identified.				
Professional Judgement – Engineered solution				
None identified.				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a highly unlikely unplanned hydrocarbon release as a result of a loss of pipeline containment. The principle of inherent safety and environmental protection is based on the prevention of the event through design of pipeline and riser integrity and ensuring the systems are operated within their design envelope through operating practices and assurance through maintenance and inspection. If hydrocarbon loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation. The controls in place for prevention and mitigation are specified and assured through implementing the Macedon Facility Safety Case and the various standards and plans. Given the controls in place to prevent and control loss of containment events and mitigate their consequences, it is considered that the risk associated with Pipeline, flowline or subsea Loss of Containment at Macedon is managed to ALARP, and the controls demonstrate the EPOs are met.				

Demonstration of Acceptability
Acceptability Statement Loss of pipeline, flowline or subsea containment has been evaluated as having a 'tolerable' level of risk rating. As per Section 2, Woodside considers 'tolerable' risk ratings as broadly acceptable if the adopted controls are implemented. Due to the severity associated with the event, ALARP is demonstrated using good industry practice, consideration of company and societal values and risk based analysis, if legislative requirements are met and societal concerns are accounted for and the alternative control measures are grossly disproportionate to the benefit gained. Acceptability is demonstrated with regard to the considerations described in Section 2 (the considerations include principles of Ecological Sustainable Development, internal context, external context and other requirements [includes laws, policies, standards and conventions]).

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 13 No release of hydrocarbons to the marine environment from loss of containment from subsea infrastructure.	C 13.1 Implement the Integrity Management Plan, which drives the inspection program to identify integrity issues.	PS 13.1 Integrity will be managed in accordance with Subsea Facilities and Pipeline Integrity Management Plan.	MC 13.1.1 Records demonstrate compliance with Subsea Facilities and Pipeline Integrity Management Plan.
	C 13.2 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the Macedon Facility.	PS 13.2 An accepted Safety Case is implemented, and notification and reporting is undertaken in accordance with the Regulations (as applicable).	MC 13.2.1 Accepted Safety Case
	Refer to C 1.2 (Section 6.6.1)	Refer to PS 1.2 (Section 6.6.1)	Refer to MC 1.2.1 (Section 6.6.1)
	C 11.5 Refer to Section 7.1.1	PS 11.5.1 PS 11.5.2 Refer to Section 7.1.1	MC 11.5.1 MC 11.5.2 Refer to Section 7.1.1
	Refer to C 12.1 (Section 7.1.2)	Refer to PS 12.1 (Section 7.1.2)	Refer to MC 12.1.1 (Section 7.1.2)
	Refer to C 12.2 (Section 7.1.2)	Refer to PS 12.2 (Section 7.1.2)	Refer to MC 12.2.1 (Section 7.1.2)

7.1.4 Unplanned Discharges: Hazardous and Non-hazardous Waste Management

Context		
Subsea Support Vessels – Section 3.9	Physical Environment – Section 4.4 Biological Environment – Section 4.5	Consultation – 5

Impacts and Risks Evaluation Summary

Source of Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Loss of non-hazardous solid waste (rubbish) overboard.		x	x			x		A	2 - Measurable	Highly Unlikely	0.9	LCS GP	Tolerable	EPO 14
Accidental leaks from storage and equipment, ROV, AUV hydraulic fluid			x					A	1 - Minor	Possible	1			

Description of Source of Risk

Normal support vessel operations result in a variety of hazardous and non-hazardous wastes. These materials could potentially impact the marine environment if incorrectly disposed of, lost overboard, or discharged in significant quantities.

Non-hazardous wastes include domestic and industrial wastes, such as aluminium cans, bottles, paper and cardboard, scrap steel. The volumes of non-hazardous waste generated on vessels are generally low.

Hazardous wastes are defined as wastes that are, or contain, ingredients harmful to health or the environment. These include recovered solvents, excess or spent chemicals, oil contaminated materials (e.g., sorbents, filters and rags), batteries, and used lubricating oils. Waste is segregated onboard the vessels and stored in designated skips and waste containers. All waste materials not suitable for discharge to the environment, including hazardous wastes (i.e., liquid and solid wastes), are transported to shore for disposal or recycling by Woodside's licensed waste contractor.

Consequence Assessment

The potential impacts of solid wastes accidentally discharged to the marine environment include direct disturbance, pollution and contamination of the marine environment and secondary impacts relating to potential contact of marine fauna with wastes resulting in entanglement or ingestion and potentially leading to injury and death of individual animals.

Accidental loss overboard of single items or units of waste may impact the environment through a reduction in water quality, or present a hazard to marine fauna, depending on the waste involved. Given the small volumes of waste generated and the management in place to prevent loss overboard (e.g., covers on skips/bins), the risk of impact is considered to be low.

Solid material accidently lost to the marine environment could potentially sink to the seabed causing disturbance. The area of seabed disturbance will be limited to the size of the object footprint. If not retrieved, a slight localised contamination of benthic sediments could occur. However, there are no significant coral reef structures within the Operations Area, with much of the substrate comprising sandy gravels with a low but variable cover of epibiota. The seabed fauna in the area is sparse and predominantly comprised of crustaceans and polychaetes (worms). These

species are considered to have low sensitivity to physical disturbance (compared to, for example, sponges or octocorals) and generally display high recovery following physical disturbance.

All waste (hazardous and non-hazardous) generated by vessels during IMMR activities is transported to and managed appropriately by 3rd parties. Environmental impacts associated with onshore disposal relate to the small incremental increase in waste volumes received at the onshore licensed waste recycling and/or disposal sites. The environmental impacts associated with waste disposal onshore are anticipated to be low because of the minor quantities involved, recycling of some materials and the localised area of impact.

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 the transitory nature of the species present.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[48]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution prevention – packaged harmful substances) 2014; • Marine Order 95 (Pollution prevention – Garbage).	F: Yes CS: Minimal cost. Standard practice.	Implementation of Marine Order 94 and 95 reduces the likelihood of a harmful substance being released to the environment. Implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Controls based on legislative requirements – must be adopted.	Yes C 14.1
Good Practice				
All contracted vessels will have a waste management plan for managing waste generation, storage, transport and disposal.	F: Yes CS: Standard practice. Minimal cost.	Reduces probability of waste being discharged to sea and ensures compliance with Marine Order 94 and 95.	Control based on Woodside standard and regulatory requirements.	Yes C 14.2

[48] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[48]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Recovery of solid wastes/equipment lost overboard attempted where safe and practicable for this activity considering: • Risk to personnel to retrieve object • Whether the location of the object is in recoverable water depths • Object's proximity to subsea infrastructure • Ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather) Any material dropped objects/waste that remain in the title will undergo an impact assessment and be added to an inventory of objects on the seabed.	F: Yes CS: Standard practice. Minimal cost.	Impacts to the marine environment from unplanned releases of material will be mitigated, where possible.	Benefit outweighs cost.	C 14.3
Professional Judgement –Elimination				
None identified.				
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
None identified.				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of accidental discharge of non-hazardous and hazardous wastes. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP, and the controls demonstrate that the EPOs are met.				

Demonstration of Acceptability
Acceptability Statement: The consequence assessment has determined that, given the adopted controls, the accidental discharge of non-hazardous waste and hazardous waste represent a tolerable risk rating and is unlikely to result in a consequence greater than slight, short-term impacts to water quality, marine sediments and marine species. Woodside, across its operations has a well-established waste management culture which underpins a strong performance and limits the potential for accidental releases to the marine environment. Opportunities to reduce waste management impact and risks are employed through standard practice such as job planning, implementation of the Waste Management Plan, lifting procedures, and job hazard analysis practices. The adopted controls are considered good oil-field practice/industry best practice and meet relevant Commonwealth and WA State regulatory requirements. The potential impacts and risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of accidental discharge of non-hazardous and hazardous waste to a level that is broadly acceptable.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 14 No release of hazardous and non-hazardous waste[49] to the marine environment.	C 14.1 Contract 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 14.1 Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class.	MC 14.1.1 Marine verification records demonstrate compliance with standard maritime safety procedures (Marine Orders 94 and 95).
	C 14.2 All contracted vessels will have a waste management plan for managing waste generation, storage, transport and disposal.	PS 14.2 Waste management plan will be implemented, including preventative and mitigating controls.	MC 14.2.1 Waste management plan prepared in consultation with Vessel Contractor and Waste Contractor.
			MC 14.2.2 Records of waste type, source and quantities of waste sent onshore are maintained.

[49] Waste as defined in the Woodside Offshore Facilities Waste Management Plan.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 14.3 Recovery of solid wastes/equipment lost overboard attempted where safe and practicable for this activity considering: • Risk to personnel to retrieve object • Whether the location of the object is in recoverable water depths • Object's proximity to subsea infrastructure • Ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather) Any material dropped objects/waste that remain in the title will undergo an impact assessment and be added to an inventory of objects on the seabed.	PS 14.3.1 Material solid waste/equipment dropped to the marine environment will be recovered where safe and practicable to do so. Where retrieval is not practicable and/or safe, material items (property) that are lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.	MC 14.3.1 Records demonstrate outcomes of the safe and practicable evaluation, including an impact assessment for the objects remaining.
		PS 14.3.2 Incident reports raised for unplanned loss of solid waste/equipment and recordable incidents notified for material unplanned releases, regardless of whether the item/s are recovered.	MC 14.3.2 Records demonstrate applicable recordable incident notifications completed.

7.1.5 Physical Presence: Seabed Disturbance from Dropped Objects

Context		
Subsea Support Vessels – Section 3.9	Physical Environment – Section 4.4 Biological Environment – Section 4.5	Consultation –5

Impacts and Risks Evaluation Summary

Source of Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Dropped objects from vessels.		x				x		A	1 - Minor	Unlikely	1	LCS GP	Tolerable	EPO 15

Description of Source of Risk

During the life of this EP the primary cause for unplanned seabed disturbance is through dropped objects from the subsea support vessels performing IMMR activities.

There is the potential for objects to be dropped overboard from the subsea support 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. The spatial extent in which dropped objects can occur is restricted to the Operational Area.

Consequence Assessment

In the unlikely event of an object being dropped into the marine environment or failed mooring, potential environmental effects would be limited to minor 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 minor but permanent.

KEFs

The temporary or permanent loss of dropped objects into the marine environment and mooring failure is likely to result in a minor 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 the Canyons Linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEFs overlaps the Operational Area. Benthic communities in the Operational Area are representative of the deep water soft sediment habitats reported in the wider region, and is 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 dropped objects, slight impacts are expected to seabed sensitivities within the Operational Area. Furthermore, the Operational Area overlaps a relatively minor proportion of the KEF (Figure 4 10). Further, considering the types, size, scale and frequency of dropped objects that could occur, it is unlikely that a dropped object would have a significant impact on any benthic community.

Any unplanned seabed disturbance within the KEF would be relatively small compared to the size of the KEF. There will be no substantial adverse effect on the KEF or the communities within it. On this basis, any impacts are expected to be minor.

Epifauna and Infauna

As a result of a change in water quality and change in habitat, injury or mortality to marine fauna resulting from an increase in turbidity may occur. Given a change to water quality is unlikely, the only receptors that would potentially be

at risk of unplanned seabed disturbance are bottom dwelling species including epifauna and infauna. Benthic communities, including epifauna and infauna may be impacted by the dropped objects, or the drag of anchors on the seabed. If not recovered, dropped objects may result in the permanent loss of a small area under the object.

Given generally sparse benthic communities in the Operational Area, epifauna and infauna communities observed are likely to be well represented elsewhere in the region, impacts are expected to be restricted to a localised proportion of epifauna and infauna communities.

Based on the detailed evaluation, the magnitude of potential impacts to epifauna and infauna from unplanned seabed disturbance during activities associated with the Petroleum Activities Program is evaluated to be minor.

Cultural Values and Heritage

Woodside has conducted consultation with Traditional Custodian groups as described in Section 5. Consultation with Traditional Custodians has not identified any Aboriginal cultural features or heritage values specifically associated with the Macedon subsea infrastructure. However, consultation with the Western Australian Museum has identified an opportunity to undertake an assessment of the prospectivity for archaeological sites along the entire pipeline route, including the portion in Commonwealth waters (and within the Operational Area). Therefore, prior to any future seabed disturbing activities occurring, Woodside will undertake a desktop survey to understand the likelihood of cultural heritage features being present in that area.

Should any Aboriginal cultural features or heritage values be identified within the Operational Area there is potential for these to be impacted in the event of a dropped object in the same area in which they are located.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[50]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
None identified				
Good Practice				
Dropped objects will be recovered if safe and practicable to do so.	F: Yes CS: Minimal cost. Standard practice.	Potentially reduces consequence by recovering object/waste container from the environment.	Benefit outweighs cost sacrifice.	Yes C 15.1
Lifting procedures applied by all vessels to minimise risk of dropped objects overboard.	F: Yes CS: Standard practice. Minimal cost.	Reduces the risk of a dropped object during lifting operations.	Control based on Woodside standard and regulatory requirements.	Yes C 15.2

[50] Qualitative measure

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[50]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Recovery of solid wastes/equipment lost overboard attempted where safe and practicable for this activity considering: • Risk to personnel to retrieve object • Whether the location of the object is in recoverable water depths • Object's proximity to subsea infrastructure • Ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather) Any material dropped objects/waste that remain in the title will undergo an impact assessment and be added to an inventory of objects on the seabed.	F: Yes CS: Standard practice. Minimal cost.	Impacts to the marine environment from unplanned releases of material will be mitigated, where possible.	Benefit outweighs cost.	C 14.3
Review of existing survey data by a suitably qualified maritime archaeologist prior to future seabed disturbing activities to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options.	Review of data by suitably qualified maritime archaeologist will inform potential exclusion or avoidance areas for seabed disturbance. Implementing this process will protect and minimise any physical impacts to underwater cultural heritage. Additionally, this process is not inconsistent with the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters (DCCEEW, 2024).	Benefits outweigh cost/ sacrifice.	Yes C 4.1

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[50]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
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 8.6.	F: Yes. CS: Cost of implementation	Allows management of Unexpected Finds in accordance with legislative requirements, (including Underwater Cultural Heritage Guidance for Offshore Developments and the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters (DCCEEW, 2024) under the UCH Act, expert advice and community expectations.	Benefits outweigh cost/ sacrifice.	Yes C 4.2
Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure set out in Section 7.6.	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefit outweighs cost/ sacrifice.	Yes C 4.3
Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act	F: Yes CS: Costs associated with the implementation	Implementation of the control ensures any impacts to significant Aboriginal areas and significant Aboriginal objects protected by Ministerial declaration, are acceptable under the standards of the ATSIHP Act.	Control based on legislative requirements – must be adopted.	Yes C 4.4
Project inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	F: Yes CS: Minimal	Ensures workforce is suitably aware of cultural features and heritage values in the area they are operating.	Benefits outweigh cost/sacrifice.	Yes C 4.5
Professional Judgement –Elimination				
None identified.				
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
None identified.				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[50]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of seabed disturbance from dropped objects, and demonstrate the EPOs are met. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.

Demonstration of Acceptability
Acceptability Statement:
The consequence assessment has determined that, given the adopted controls, the accidental seabed disturbance from dropped objects represent a tolerable risk rating and is unlikely to result in a consequence greater than slight, short-term impacts to the seabed, including KEFs, benthic habitats and cultural values. Woodside, across its operations has a well-established waste management culture which underpins a strong performance and limits the potential for accidental releases to the marine environment. Opportunities to reduce the likelihood of dropped objects are employed through standard practice such as job planning, lifting procedures, and job hazard analysis practices. The adopted controls are considered good oil-field practice/industry best practice and meet relevant Commonwealth and WA State regulatory requirements. The potential impacts and risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of accidental discharge of unplanned seabed disturbance to a level that is broadly acceptable.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 15 Seabed disturbance to be limited to planned activities and impacts described as part of the Petroleum Activities Program and will not occur outside the Operational Area. EPO 3 No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit	C 15.1 Dropped objects will be recovered if safe and practicable.	PS 15.1 Material[51] environmentally hazardous or non-hazardous solid waste object/container dropped to the marine environment will be recovered where safe and practicable to do so. Where safe and practicable for this activity will consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather).	MC 15.1.1 Records detailing the recovery considerations or attempts, and status of material lost to the marine environment.

[51] For the purposes of this control/performance standard "material" is defined as unplanned releases of environmentally hazardous or non-hazardous solid object/waste events with an environmental consequence of >F.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 15.2 Lifting procedures applied by all vessels to minimise risk of dropped objects.	PS 15.2 Work (lifting/ operating) procedures	MC 15.2.1 Woodside audit/ vessel inspection record verifies lifting/ operating procedures, etc. in place
	C 16.1 Vessel inductions include awareness for crew in dropped object prevention.	PS 16.1.1 Dropped object prevention awareness is provided to the vessel crew.	MC 16.2.1 Records show dropped object prevention awareness is provided to the vessel crew.
	Refer to C 4.1 (Section 6.6.2)	Refer to PS 4.1.1 (Section 6.6.2)	Refer to MC 4.1.1 (Section 6.6.2)
	Refer to C 4.2 (Section 6.6.2)	Refer to PS 4.2.1 (Section 6.6.2)	Refer to MC 4.2.1 (Section 6.6.2)
	Refer to C 4.3 (Section 6.6.2)	Refer to PS 4.3.1 (Section 6.6.2)	Refer to MC 4.3.1 (Section 6.6.2)
	Refer to C 4.4 (Section 6.6.2)	Refer to PS 4.4.1 (Section 6.6.2)	Refer to MC 4.4.1 (Section 6.6.2)
	Refer to C 4.5 (Section 6.6.2)	Refer to PS 4.5.1 (Section 6.6.2)	Refer to MC 4.5.1 (Section 6.6.2)
	Refer to C 14.3 (Section 7.1.4)	Refer to PS 14.3.1 (Section 7.1.4)	Refer to MC 14.3.1 (Section 7.1.4)
		Refer to PS 14.3.2 (Section 7.1.4)	Refer to MC 14.3.2 (Section 7.1.4)

7.1.6 Physical Presence: Interaction with Live Infrastructure

Context		
Support vessel operations – Section 3.9 IMMR activities 3.8	Socio-economic Environment – Section 4.9.6	Consultation – Section 5

Impact Evaluation Summary

Source of Impact	***Environmental Value Potentially Impacted***						***Evaluation***						
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/Habitat	Species	Socio-economic	Decision Type	Consequence / Impact	Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Interaction with live infrastructure from dropped objects						X	A	2- Measurable	Unlikely	3	LCS GP	Tolerable	EPO 16

Description of Source of Impact

As detailed in Section 4.9.6, the Operational Area overlaps the Operational Area associated with the operation of Woodside's Pyrenees field. This area of overlap includes live infrastructure associated with the Macedon-6 well. During IMMR activities there is potential for IMMR vessels to be operating over and/or near the live Pyrenees infrastructure that is overlapped by the Macedon Operational Area.

Dropped Objects

There is the potential for objects to be dropped overboard from the IMMR vessels to the marine environment. Objects that have been dropped during previous offshore activities include small numbers of personal protective gear (e.g. glasses, gloves, hard hats), small tools (e.g. spanners), hardware fixtures (e.g. riser hose clamp). However, there is potential for larger equipment to be dropped during the activity depending on the nature of IMMR activities within the Operational Area. The spatial extent in which dropped objects can occur is restricted to the Operational Area.

Impact Assessment

Potential impacts to environmental values

Interactions with other marine users

In the unlikely event of an object being dropped on live infrastructure there is potential impacts to the infrastructure.

Within the Operational Area, there is infrastructure associated with the Pyrenees Field Production System owned by Woodside.

If interactions with live infrastructure were to occur, Woodside would notify the relevant operations team in accordance with the SIMOPS plan. This would trigger responses from the operator to assess and respond to any damage caused in accordance with the relevant operations EP for the live infrastructure. Under Regulation 56 of the Environment Regulations, a titleholder may refer NOPSEMA to information previously given to NOPSEMA for another purpose under the OPGGS Act, the Environment Regulations or any other regulations made under the Act, to comply with a requirement on the titleholder under the Environment Regulations to give NOPSEMA information or include information in a document. In accordance with Regulation 56, NOPSEMA is referred to the relevant operations EP[52] submitted by Woodside, and accepted by NOPSEMA, for the detail of the assessment and response in such a

[52] Pyrenees Operations EP (NOPSEMA Doc A680737, https://docs.nopsema.gov.au/A680737)

scenario. Potential impacts therefore include time and costs associated with inspecting the infrastructure and time and costs associated with any associated repair, which are expected to be slight and short-term in nature.

Potential subsequent loss of containment

In the unlikely event of an object being dropped on live infrastructure, and in the further unlikely event of a severe interaction with the infrastructure, there is a possibility that live infrastructure could be ruptured releasing hydrocarbons into the marine environment in such a scenario. In accordance with Regulation 56, NOPSEMA is referred to the relevant operations EPs submitted by Woodside for the operation of the live infrastructure associated with the Pyrenees field production system, and accepted by NOPSEMA, for the detail of potential impacts, receptors and the extent of the environment that may be affected in such a scenario, being:

- Pyrenees Operations EP (NOPSEMA Doc A680737, https://docs.nopsema.gov.au/A680737)

As detailed in this Section above and below, this EP addresses the risks and impacts (interaction with live infrastructure) that arise from the activities under this EP (interaction from dropped objects). This EP also contains controls to prevent such an event from occurring that are within the operational control of this EP. As detailed in this Section, the operational control, maintenance and incident response associated with the live infrastructure and/or loss of containment from the live infrastructure is not within the operational control of this EP. As detailed below, the risks and impacts of the activities under this EP are managed to ALARP and an acceptable level by implementing the SIMOPS plan and notifying the relevant Operators in the instance of an interaction with live infrastructure to allow the relevant Operator's detailed response strategies under the relevant operations EPs to be triggered, if required. In the event of a loss of containment caused by an interaction with live infrastructure Woodside will follow direction from the Pyrenees operations team and will respond as per the relevant requirements. In accordance with Regulation 56, NOPSEMA is referred to the relevant operations EP submitted by Woodside for the live infrastructure associated Pyrenees field production system, and accepted by NOPSEMA, for the detail of the operational control, maintenance and incident response associated with the live infrastructure and/or loss of containment from the live infrastructure.[53]

Demonstration of ALARP

Control Considered	Control Feasibility (F) and Cost/Sacrifice (CS)[54]	Benefit in Impact/Risk Reduction	Proportionality	Control Adopted
Good Practice				
No additional controls identified				
Professional Judgement – Eliminate				
No additional controls identified				
Professional Judgement – Substitute				
No additional controls identified				
Professional Judgement – Engineered Solution				
Lifting procedures applied by all vessels to minimise risk of dropped objects.	F: Yes CS: Minimal cost. Standard practice.	Reduces the likelihood of failure resulting in dropped objects.	Benefit outweighs cost sacrifice.	Yes C 15.2

ALARP Statement

Woodside considers the adopted controls appropriate to manage the risks of a significant dropped object or anchor drag interacting with live infrastructure within the Operational Area, and demonstrate that the EPOs are met. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without disproportionate sacrifice, the risks and consequences are considered ALARP.

Demonstration of Acceptability

Acceptability Statement

The impact assessment has determined that interaction with live infrastructure from dropped objects or a loss of station keeping of the MODU represents a low current risk rating and is unlikely to result in a risk consequence greater than slight. The adopted controls are considered industry good practice.

[53] Pyrenees Operations EP (NOPSEMA Doc A680737, https://docs.nopsema.gov.au/A680737)
[54] Qualitative measure

The potential risks and consequences are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of seabed disturbance from dropped objects / anchor drag to an acceptable level.

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
EPO 16 No interaction with live infrastructure as a result of the Petroleum Activities Program.	Refer to C 15.2 (Section 7.1.5)	Refer to PS 15.2 (Section 7.1.5)	Refer to MC 15.2.1 (Section 7.1.5)

7.1.7 Physical Presence: Vessel Collision with Marine Fauna

Context		
Subsea Support Vessels – Section 3.9	Protected Species – Section 4.6	Consultation – Section 5

Impacts and Risks Evaluation Summary

Source of Risk	*Environmental Value Potentially Impacted*							*Evaluation*						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Physical presence of vessels.						x		A	2 - Measurable	Highly Unlikely	0.9	LCS	Tolerable	EPO 17

Description of Source of Risk

Vessels operating in the Operational Area may present a potential hazard to cetaceans and other protected marine fauna, such as whale sharks and marine reptiles. Vessel movements can result in potential impacts ranging from behavioural interference to 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 include vessel type, vessel operation (specific activity, speed), physical environment (e.g., water depth) and the type of animal potentially present and their behaviours. The duration of potential risk will be restricted to the short periods that vessels are in the Operations Area for IMMR activities.

Consequence Assessment

Considering the low number of vessel movements associated with the activity and the low vessel speeds in the Operations Area, it is unlikely that additional vessel traffic in the Operations Area as a result of IMMR activities will have a significant impact on migratory fauna species or other transiting marine fauna that may be present.

Vessel collisions have been known to contribute to the mortality of marine fauna. The likelihood of a 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).

Whales

Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. According to the data of Vanderlaan and Taggart (2007), it is estimated that the risk is less than 10% at a speed of 4 knots. Vessel-whale collisions at this speed are uncommon and, based on reported data contained in the US National Ocean and Atmospheric Administration database (Jensen and Silber 2004). There only two known instances of collisions when the vessel was travelling at less than 6 knots, both of these were from whale watching vessels that were deliberately placed amongst whales.

Vessels undertaking IMMR activities within the Operational Area are likely to be stationary or moving slowly (~4 knots). Therefore, the risk of a vessel collision with protected species resulting in death is inherently low.

The nearest recognised BIAs for a cetacean (considered to be at risk due to relatively slow movement and proportion of time spent at or near the sea surface) is the humpback whale migration BIA, which overlaps the Operational Area (refer to Section 4.6.3). The pygmy blue whale migration BIA also lies 14.9 km west of the Operational Area and the BIA and habitat critical to the survival of the southern right whale is 16.7 km from the Operational Area (at the closest

point). Each of the Conservation Management Plans and Conservation Advice for the threatened whale species with a likely presence in the Operational Area identify vessel strike/vessel disturbance as a threat to the species.

Adverse interactions between vessels and humpback or pygmy blue whales are unlikely due to the slow speeds of project vessels within the Operational Area, and the distance of the Operational Area from these known BIAs.

Sharks

Whale sharks are at risk from vessel strikes when feeding at the surface or in shallow waters (where there is limited option to dive). Vessel strike is recognised as a threat in the Approved Conservation Advice for Rhinocodon typus (Whale Shark) (TSSC, 2015). Whale sharks may traverse offshore NWS waters including the Operational Area during their migrations to and from Ningaloo Reef. However, it is expected that whale shark presence within the Operational Area would not comprise of significant numbers given there is no main aggregation area within the vicinity of the Operational Area, and their presence would be transitory and of a short duration. There are no constraints preventing whale sharks from moving away from vessels (e.g., shallow water or shorelines).

Marine Turtles

With consideration of the absence of potential nesting or foraging habitat (i.e., no emergent islands, reef habitat or shallow shoals) and the water depth (60-180 m in Commonwealth waters), it is considered that the Operational Area is unlikely to represent important habitat for marine turtles. It is acknowledged, however, that there are significant nesting sites along the WA mainland coast and islands of the region and that turtles may occur within the Operational Area in low numbers. There is an internesting BIA for the flatback turtle which overlaps the Operational Area, which is associated with the Montebello Islands (see Section 4.6.2). The Montebello Islands themselves are located about 152 km north-east of the Operational Area and this internesting area is a spatially assigned buffer for marine turtles nesting at the Montebello Islands. Therefore, it is unlikely that flatback turtles nesting at the Montebello Islands will be found to aggregate in significant numbers more than 100 km away and within the Operational Area.

Marine turtles are long-lived, slow to mature and are subject to a number of threats of which boat strike is the most relevant to IMMR activities as part of Macedon operations. As discussed in the Recovery Plan for Marine Turtles in Australia (CoA, 2017), marine turtles are vulnerable to boat strikes when at the surface to breathe and when resting between dives. The marine turtle populations affected by boat strike have been identified as: loggerhead turtles from the eastern Australian population; green turtles from the southern Great Barrier Reef population; hawksbill turtles from the north-eastern Australian populations; and flatback turtles from Queensland (CoA, 2017). On this basis, controls relating to vessel speed for cetaceans (EPBC Regulations 2000 – Part 8 Division 8.1) have been modified to include turtles and whale sharks to mitigate the potential for vessel strikes noting that intervention vessels do not travel at the same speeds that can be attained by recreational pleasure craft.

The typical response from turtles on the surface to the presence of vessels is to dive (a potential “startle” response), which decreases the risk of collisions (Hazel et al. 2007). As with cetaceans, the risk of collisions between turtles and vessels increases with vessel speed (Hazel et al. 2007). Given the low speeds of vessels undertaking the Petroleum Activities Program, along with the expected low numbers of turtles within the Operational Area, interactions between vessels and turtles are considered to be unlikely.

It is not deemed credible that vessel movement associated with IMMR activities could have a significant impact on marine fauna populations given (1) the low presence of transiting individuals, (2) avoidance behaviour commonly displayed by whales, whale sharks and marine turtles and (3) low operating speed of the activity support vessels (generally less than 8 knots or stationary, unless operating in an emergency). Activities are considered unlikely to have a significant impact on marine fauna species other than short-term disruption to individuals or a small proportion of the population and no impact is expected on critical habitat or fauna activity.

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				
Vessels operate in accordance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures: • Vessels will not travel greater than 6 knots	F: Yes CS: Minimal cost. Standard practice.	Reductions in speed around protected fauna reduce the likelihood of collision.	Controls based on legislative requirements – must be adopted.	Yes C 5.1

[55] *Qualitative measure*

within 300 m of a cetacean or turtle (caution zone). • Vessels will not approach closer than 50 m for a dolphin or turtle and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean or turtle shows signs of being disturbed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • Vessels will not travel greater than 8 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.				
Good Practice				
Vary the timing of the Petroleum Activities Program to avoid migration periods.	F: No. The Petroleum Activities Program occurs continuously over a 5-year period, modifying the timing of the Petroleum Activities Program is not feasible. CS: Not considered, control not feasible.	Not considered, control not feasible.	Not considered, control not feasible.	No
Have a dedicated experienced and trained Marine Fauna Observer (MFO) onboard vessels to undertake marine fauna observations.	F: Yes, however additional cost for dedicated and experienced MFO to be present during IMMR. CS: Moderate, requires the provision of a dedicated experienced MFO to undertake Marine Fauna Observations.	Use of an MFO may detect fauna in the area.	Cost disproportionate to increase in environmental benefit. Potential impacts are low and IMMR activities are of short duration.	No
Professional Judgement – Eliminate				
Do not use vessels.	F: No. No alternative to the use of vessels during the Petroleum Activities Program was identified. Given that vessels must be used to undertake the Petroleum Activities Program. There is no feasible means to	Not assessed, control not feasible.	Not assessed, control not feasible.	No

	eliminate the source of risk. CS: Not assessed, control not feasible			

Professional Judgement – Substitute

None identified.

Professional Judgement – Engineered Solution

None identified.

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the risk of vessel collision with marine fauna and demonstrate that the EPOs are met. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.

Demonstration of Acceptability

Acceptability Statement:

The consequence assessment has determined that, given the adopted controls, vessel collision with marine fauna represents a low-risk rating that is 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 activity. Further opportunities to reduce the impacts and risks have been investigated above. The adopted controls are considered good oil-field practice/industry best practice and meet the requirements of Part 8 (Division 8.1) of the EPBC Regulations 2000. The potential impacts and risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of vessel collision with marine fauna to a level that is broadly acceptable.

EPOs, EPSs and MC

Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 17 No injury of, or mortality to, EPBC Act 1999 and listed marine fauna as a result of the Petroleum Activities Program.	C 5.1 Refer to Section 6.6.3	PS 5.1 Refer to Section 6.6.3	MC 5.1.1 Refer to Section 6.6.3
			MC 5.1.2 Refer to Section 6.6.3

7.1.8 Physical Presence: Introduction of Invasive Marine Species

Context		
Subsea Support Vessels – Section 3.9	Biological Environment – Section 4.5	Consultation – Section 5

Impacts and Risks Evaluation Summary

Source of Risk	*Environmental Value Potentially Impacted*							*Evaluation*						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-cultural	Decision Type	Severity	Likelihood	Risk Level	ALARP Tool	Acceptability	Outcome
Invasive species in vessel ballast tanks or on vessels / submersible equipment.					x	x		A	4 - Serious	Highly Unlikely	9	LCS GP	Tolerable	EPO 18 EPO 19

Description of Source of Risk

The vessels undertaking IMMR activities have the potential to translocate marine pests either via biofouling or in ballast water. Vessels may be sourced from the local area (Dampier, Port Hedland, etc.) or from further afield, depending on the type of vessel required and availability. In addition, infrequent import of materials (e.g., spares) from international suppliers may be required. Vessels arriving from international waters typically call into Dampier, where quarantine clearance including ballast log reviews is conducted in accordance with Biosecurity Act 2015.

All vessels are inherently subject to some level of marine fouling. Organisms attach to the vessel hull, particularly in areas where organisms can find a good surface (e.g., seams, strainers and unpainted surfaces) or where turbulence is lowest (e.g., niches, sea chests etc.). Organisms can also be drawn into ballast tanks during on-boarding of ballast water as cargo is unloaded or to balance vessels under load.

Non-indigenous Marine Species (NIMS) have been introduced into a region beyond their natural biogeographic range and have the ability to survive, reproduce and establish founder populations. Not all NIMS introduced into an area will thrive or cause demonstrable impacts. Indeed, the majority of NIMS around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. Only a subset of NIMS that become abundant and impact on social/cultural, human health, economic and/or environmental values can be considered IMS.

During the IMMR activities, discharge of ballast water from vessels has the potential to lead to the introduction of IMS.

The majority of vessels used during IMMR activities will be support vessels; these are typically sourced from Australia and are not considered high risk for IMS introduction.

Consequence Assessment

IMS have historically been introduced and translocated around Australia by a variety of human means including biofouling and ballast water. Species of concern are those that:

- are not native to the region
- are likely to survive and establish in the region
- are able to spread by human mediated or natural means.

Species of concern vary from one region to another depending on various environmental factors such as water temperature, salinity, nutrient levels and habitat type. These factors dictate their survival and invasive capabilities.

Introducing IMS into the local marine environment may alter the ecosystem, as IMS have characteristics that make them superior (in a survival and/or reproductive sense) to indigenous species. They may prey upon local species (which had previously not been subject to this kind of predation and therefore not have evolved protective measures

against the attack), they may outcompete indigenous species for food, space or light and can also interbreed with local species, creating hybrids such that the endemic species is lost.

IMS have also proven economically damaging to areas where they have been introduced and established. Such impacts include direct damage to assets (fouling of vessel hulls and infrastructure) and depletion of commercially harvested marine life (e.g., shellfish stocks). IMS have proven particularly difficult to eradicate from areas, once established. If the introduction is captured early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life.

Although the consequence of the establishment of a marine pest is considered high, the deep offshore open waters of the Operational Area are not conducive to the settlement and establishment of IMS (Geiling 2016), due to the lack of light or suitable habitat to sustain growth or survival. The IMMR activities will be undertaken in an open ocean, offshore location more than 12 nm from shorelines and/or critical habitat and in waters approximately 60 to 180 m deep.

Assessment by DCCEEW (then DEWHA) of the potential impacts from IMS as a result of the Macedon Operations concluded that they were unlikely to be significant provided specific management measures were implemented. Woodside intends to source vessels for Macedon IMMR activities from those already operating on the NWS and to implement management in accordance with prevailing biosecurity legislation and regulations, and the Development's conditions of approval, including implementation of an Introduced Marine Pest Management Procedure (AOHSE-E-0018). Given the very limited scale of vessel operations and the management that will be implemented, it is considered extremely unlikely that a successful IMS introduction would occur as a result of IMMR activities, and the residual risk is considered tolerable.

Summary of Potential Impacts to Environmental Value(s)

In support of Woodside's assessment of the impacts and risks of IMS introduction associated with the Petroleum Activities Program, risk and impact evaluations of the different aspects of marine pest translocation associated with the activity are undertaken. The results of this assessment are presented in the table below.

As a result of this assessment Woodside has concluded that the risk of introduction of IMS is tolerable.

IMS Introduction Aspect	Credibility of Introduction	Consequence of Introduction	Likelihood
Transfer of IMS from infected vessel to Operational Area and establishment on the seafloor or subsea infrastructure.	Not Credible The deep offshore open waters of the Operational Area, away from shorelines and/or critical habitat, more than 12 nm from the shore and in waters 60 to 180 m deep are not conducive to the settlement and establishment of IMS.		

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
On arrival in Australia all vessels will manage their ballast water using one of the approved ballast water management options, as specified in the Australian Ballast Water Management Requirements.	F: Yes CS: Minimal cost. Standard practice.	Reduction in the likelihood that ballast water will host IMS.	Controls based on legislative requirements under the Biosecurity Act 2015 – must be adopted.	Yes C 18.1
Good Practice				
Woodside's IMS risk assessment process will be applied to the project vessels and immersible equipment. Assessment will consider the following risk factors: For vessels:	F: Yes CS: Minimal cost. Good practice implemented across all Woodside Operations.	Identifies potential risks and additional controls implemented accordingly. In doing so, the likelihood of transferring marine pests between subsea support vessels within the Operational Area is	Benefits outweigh cost/sacrifice.	Yes C 18.2

• recent IMS inspection and cleaning history, including for internal niches • 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 greater than seven days • region of stationary or slow periods • type of activity – contact with seafloor. • For immersible equipment: • region of deployment since last thorough clean, particularly coastal locations • duration of deployments • duration of time out of water since last deployment • transport conditions during mobilisation • post-retrieval maintenance regime. • Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as the treatment of internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.		reduced. No change in consequence would occur.		
Professional Judgement – Eliminate				
Do not use vessels.	F: No. No alternative to the use of vessels during the Petroleum Activities Program was identified. Given that vessels must be used to undertake the Petroleum Activities Program. There is no feasible means to	Not assessed, control not feasible.	Not assessed, control not feasible.	No

	eliminate the source of risk. CS: Not assessed, control not feasible			
Professional Judgement – Substitute				
Source vessels based in Australia only.	F: Yes. Support vessels are routinely sourced from Australia. However, depending on the nature of subsea IMMR activities, there may not be a suitable subsea support vessel within Australian waters. CS: Potential for significant cost and schedule impacts.	Reduction in the likelihood that a vessel will host IMS.	Disproportionate. The cost/sacrifice is grossly disproportionate to the benefit gained.	No
IMS Inspection of all vessels.	F: Yes. Approach to inspect vessels is feasible. CS: Significant cost and schedule impacts. Thorough inspections require vessels to be removed from the sea (e.g. slipped or dry docked) and examined by an IMS expert. This process incurs significant financial and schedule sacrifices. Timely vessel based support is integral to the safe and efficient operation of the Macedon subsea infrastructure and general operations.	Reduction in the likelihood that a vessel will host IMS.	Disproportionate. The cost/sacrifice is grossly disproportionate to the benefit gained.	No
Professional Judgement – Engineered Solution				
None identified.				

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of IMS introduction and establishment and demonstrate that the EPOs are met. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.

Demonstration of Acceptability

Acceptability Statement:

The risk assessment has determined that, given the adopted controls, introduction of IMS represent a low risk rating that is highly unlikely to result in a consequence greater than slight short-term impact on marine communities within the Operational Area. Further opportunities to reduce the impacts and risks have been investigated above. The adopted controls are considered good oil-field practice/industry best practice. The potential impacts and risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks of IMS to an acceptable level.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 18 No introduction and establishment of invasive marine species into the Operational Area as a result of the Petroleum Activities Program.	C 18.1 All vessels will manage their ballast water using one of the approved ballast water management options, as specified in the Australian Ballast Water Management Requirements.	PS 18.1 Compliance with 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 the introduction of IMS.	MC 18.1.1 Ballast water exchange records maintained by vessels which verifies compliance against Ballast Water Management requirements.
	C 18.2 Woodside's IMS risk assessment process will be applied to activity vessels and immersible equipment. Assessment will consider the following risk factors: • For vessels • recent IMS and cleaning history, including for internal niches • age and suitability of antifouling coating at mobilisation date • internal treatment systems and history	PS 18.2.1 Prior to entering the Operational Area Project vessels and relevant immersible equipment are determined to be low risk[56] of introducing IMS of concern.	MC 18.2.1 Records of IMS risk assessments maintained for all project vessels and relevant immersible equipment entering the Operational Area to undertake the Petroleum Activities Program.

[56] *Low risk of introducing IMS of concerns is defined as either no additional management measures required or, management measures have been applied to reduce the risk.*

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	• origin and proposed area of operation • number of stationary/slow speed periods greater than seven days • region of stationary or slow periods • type of activity – contact with seafloor. • For immersible equipment: • region of deployment since last thorough clean, particularly coastal locations • duration of deployments • duration of time out of-water since last deployment • transport conditions during mobilisation • post retrieval maintenance regime. • Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as the treatment of internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.	PS 18.2.2 IMS risk assessments undertaken by an authorised Environment Advisor who has completed relevant Woodside IMS training or by qualified and experienced IMS inspector.	MC 18.2.2 Records of Environment Adviser training and IMS inspector qualifications (as relevant).

7.2 Recovery Plan and Threat Abatement Plan Assessment

This section describes the assessment that Woodside has undertaken to demonstrate that the Petroleum Activities Program is not inconsistent with any relevant recovery plans or threat abatement plans. For the purposes of this assessment, the relevant Part 13 statutory instruments (recovery plans and threat abatement plans) are:

- Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017).
- Conservation Management Plan for the Blue Whale 2015–2025 (Commonwealth of Australia, 2015a).
- National Recovery Plan for the Southern Right Whale (DCCEEW, 2024)
- Recovery Plan for the Grey Nurse Shark (Carcharias taurus) 2014 (Commonwealth of Australia, 2014).
- Sawfishes and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b).
- Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans 2018 (Commonwealth of Australia, 2018).

Table 6-12 lists the objectives and (where relevant) the action areas of these plans, and also describes whether these objectives/action areas are applicable to government, the Titleholder, and/or the Petroleum Activities Program. For those objectives/action areas applicable to the Petroleum Activities Program, the relevant actions of each plan have been identified, and an evaluation has been conducted as to whether impacts and risks resulting from the activity are not inconsistent with that action. The results of this assessment against relevant actions are presented in Table 6-12 to Table 6-17.

Table 6-12: 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 Activities Program***
Marine Turtle Recovery Plan			
Long-term Recovery Objective: Minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
• Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles	Y		
• The management of marine turtles is supported	Y		
• Anthropogenic threats are demonstrably minimised	Y	Y	Y
• Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described	Y	Y	
Action Areas			
A. Assessing and addressing threats			
A1. Maintain and improve efficacy of legal and management protection	Y		
A2. Adaptatively manage turtle stocks to reduce risk and build resilience to climate change and variability	Y		
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	

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
A10. Maintain and improve sustainable Indigenous management of marine turtles	Y		
B. Enabling and measuring recovery			
B1. Determine trends in index beaches	Y	Y	
B2. Understand population demographics at key foraging grounds	Y		
B3. Address information gaps to better facilitate the recovery of marine turtle stocks	Y	Y	Y
Blue Whale Conservation Management Plan			
Long-term recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
• The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		
• The spatial and temporal distribution, identification of BIAs, and population structure of blue whales in Australian waters is described	Y	Y	Y
• Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
• Anthropogenic threats are demonstrably minimised	Y	Y	Y
Action Areas			
A. Assessing and addressing threats			
A.1: Maintain and improve existing legal and management protection	Y		
A.2: Assessing and addressing anthropogenic noise	Y	Y	Y
A.3: Understanding impacts of climate variability and change	Y		
A.4: Minimising vessel collisions	Y	Y	Y
B. Enabling and Measuring Recovery			

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
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
Southern Right Whale Recovery Plan			
Long-term vision: increase population to a level that the conservation status has improved and the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	Y	Y	Y
Interim Recovery Objectives			
• Current levels of Commonwealth and State legislative and management protection for southern right whales are implemented, maintained, or improved, so threats continue to be managed and reduced over the life of the plan	Y		
• Anthropogenic threats are managed consistent with ecologically sustainable principles to facilitate recovery of southern right whales	Y	Y	Y
• Population dynamics, including demographics, distribution, residency, and coastal movement across the species range are monitored and quantified using robust, standardised, best-practice methodology to assess population recovery	Y		
• The population structure in Australian waters is clearly characterised to evaluate the degree to which the western and eastern populations are separate populations and inform the degree of connectivity with other southern right whale populations	Y		
• Capability of First Nation Australians, research, citizen science, and general community groups is improved to assist in addressing recovery actions of southern right whales in Australia.	Y		
Action Areas			
Assess and address key threats			
A1: Maintain, implement and improve efficacy of current legislative and management protection for southern right whales.	Y		
A2: Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.	Y	Y	Y

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
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
Measure recovery			
B1: Measure and monitor population demographic and recovery	Y		
B2: Characterise population structure	Y		
B3: Determine migratory paths and offshore distribution	Y		
B4: Improve capability of First Nation Australians, research, citizen science, and general community groups to assist management of southern right whales	Y		
Grey Nurse Shark Recovery Plan			
Overarching Objective			
To assist the recovery of the grey nurse shark in the wild, throughout its range in Australian waters, with a view to: improving the population status, leading to future removal of the grey nurse shark from the threatened species list of the EPBC Act ensuring that anthropogenic activities do not hinder the recovery of the grey nurse shark in the near future, or impact on the conservation status of the species in the future	Y	Y	Y
Specific Objectives			
1. Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters	Y		
2. Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
3. Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
4. Where practicable, minimise the impact of shark control activities on the grey nurse shark	Y		
5. Investigate and manage the impact of ecotourism on the grey nurse shark	Y		
6. Manage the impact of aquarium collection on the grey nurse shark	Y		
7. Improve understanding of the threat of pollution and disease to the grey nurse shark	Y	Y	Y
8. Continue to identify and protect habitat critical to the survival of the grey nurse shark and reduce the impact of threatening processes within these areas	Y	Y	
9. Continue to develop and implement research programs to support the conservation of the grey nurse shark	Y	Y	
10. Promote community education and awareness in relation to grey nurse shark conservation and management	Y		
Sawfish and River Sharks Recovery Plan			
Primary Objective			
To assist the recovery of sawfish and river sharks in Australian waters with a view to: improving the population status leading to the removal of the sawfish and river shark species from the threatened species list of the EPBC Act ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future	Y	Y	Y
Specific Objectives			
1. Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species	Y		
2. Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species	Y		
3. Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species	Y		

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
4. Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species	Y		
5. Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	Y	Y	Y
6. Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life	Y	Y	Y
7. Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species	Y		
8. Improve the information base to allow the development of a quantitative framework to assess the recovery of, and inform management options for, sawfish and river shark species	Y		
9. Develop research programs to assist conservation of sawfish and river shark species	Y	Y	
10. Improve community understanding and awareness in relation to sawfish and river shark conservation and management	Y		
Marine Debris Threat Abatement Plan			
Objectives			
1. Contribute to long-term prevention of the incidence of marine debris	Y	Y	
2. Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
3. Remove existing marine debris	Y		
4. Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		
5. Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change	Y		

Table 6-13: Assessment against relevant actions of the Marine Turtle Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Turtle Recovery Plan	**Action Area A3:** Reduce the impacts from marine debris	**Action:** Support the implementation of the Marine Debris Threat Abatement Plan (TAP) Priority actions at stock level: G-NWS – Understand the threat posed to this stock by marine debris LH-WA – Determine the extent to which marine debris is impacting loggerhead turtles F-Pil – no relevant actions	Refer Section 7.1.4 **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 Activities Program.	EPO 14 C 14.1, C 14.2 PS 14.1, 14.2
	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 7.1.1, 7.1.2 and 7.1.3 **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.	Detailed oil spill preparedness and response EPOs, EPSs and MC for the Petroleum Activities Program are presented in Appendix H Oil Spill Preparedness and Response Strategy Selection and Evaluation

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
	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 Sections 6.6.7 **Not inconsistent assessment:** The assessment of light emissions has considered the potential impacts to marine turtle hatchlings and adults. Internesting, mating, foraging or migrating turtles are not impacted by light from offshore vessels. Based on the frequency and nature of IMMR activities, the impacts to nesting adults and hatchlings are expected to be minor and temporary.	EPO 10 C 10.1, 10.2 PS 10.1, 10.2
	Action Area B1: Determine trends at index beaches	**Action:** Maintain or establish long-term monitoring programs at index beaches to collect standardised data critical for determining stock trends, including data on hatchling production Priority actions at stock level: G-NWS – Continue long-term monitoring of index beaches LH-WA – Continue long-term monitoring of nesting and foraging populations F-Pil – no relevant actions	**Not inconsistent assessment:** Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program.	N/A

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
	Action Area B3: Address information gaps to better facilitate the recovery of marine turtle stocks	**Action:** Understand the impacts of anthropogenic noise on marine turtle behaviour and biology Priority actions at stock level: G-NWS – Given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise – Investigate the impacts of anthropogenic noise on turtle behaviour and biology and extrapolate findings from the NWS stock to other stocks LH-WA – no relevant actions F-Pil – no relevant actions	Refer Sections 6.6.3 **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to marine turtles. IMMR related noise is not expected to result in behavioural response, injury or mortality of individuals, or any other lasting effect.	EPO 4 and EPO 5 C 5.1 PS 5.1
Assessment Summary The Marine Turtle Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-14: Assessment against relevant actions of the Blue Whale Conservation Management Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Blue Whale Conservation Management Plan	**Action Area A.2:** Assessing and addressing anthropogenic noise	**Action 2:** Assessing the effect of anthropogenic noise on blue whale behaviour **Action 3:** Anthropogenic noise in BIAs will be managed such that any blue whale continues to use the area without injury, and is not displaced from a foraging area	Refer Sections 6.6.3 **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales. Acoustic emissions from project vessels will not cause injury to any pygmy blue whale. There are no known or possible foraging areas for pygmy blue whales within or adjacent to the Operational Area (36km away). If the Petroleum Activities Program within the Operational Area overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route, but will continue on their migration.	EPO 4 and EPO 5 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 7.1.7 **Not inconsistent assessment:** The assessment of vessel collision with marine fauna has considered the potential risks to pygmy blue whales. If the Petroleum Activities Program within the Operational Area overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route, but will continue on their migration. Vessel collisions with pygmy blue whales are highly unlikely to occur, given the low operating speed of support vessels.	EPO 17 C 5.1 PS 5.1
	Action Area B.3: Describing spatial and temporal distribution and defining biologically important habitat	**Action 2:** Identify migratory pathways between breeding and feeding grounds **Action 3:** Assess timing and residency within BIAs	**Not inconsistent assessment:** Woodside contributes to Action Area B3 via its support of targeted research initiatives (e.g. satellite tracking of pygmy blue whale migratory movements[3]).	N/A

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Assessment Summary The Blue Whale Conservation Management Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-15: Assessment against relevant actions of the Southern Right Whale Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
National Recovery Plan for the Southern Right Whale	A2: Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.	Action 1 Coastal and offshore development actions are assessed according to principles of ecological sustainable development to ensure the risk of injury, auditory impairment and/or disturbance to southern right whales is maintained. Action 3 Current information on species' occurrence, particularly in HCTS, BIAs, and historic high use areas, are used to inform planning, assessment, and decision-making on marine infrastructure development actions.	Refer Section 6.6 **Not inconsistent assessment:** This EP assesses the potential impacts of the petroleum activity do not result in the risk of injury, auditory impairment and/or disturbance to southern right whales, particularly within the HCTS and BIAs that are located 17.7 km from any Macedon infrastructure (at its closest point).	N/A

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
	A5: Assess, manage, and mitigate impacts from anthropogenic underwater noise.	Action 2: Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that it does not prevent any southern right whale from utilising the area or cause auditory impairment. Action 3: Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that the risk of behavioural disturbance is minimised. Action 4: Ensure environmental assessments associated with underwater noise generating activities include consideration of national policy (e.g., EPBC Act Policy Statement 2.1) and guidelines related to managing anthropogenic underwater noise and implement appropriate mitigation measures to reduce risks to southern right whales to the lowest possible level. Action 5: Quantify risks of anthropogenic underwater noise to southern right whales, including studies aimed to measure physiological effects, behavioural disturbance, and changes to acoustic communication (e.g., masking of vocalisations) to whales.	Refer to Section 6.6.3 **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to southern right whales. Acoustic emissions from an IMMR vessel could reach impact thresholds up to 500m distant from. the nearest BIAs and HCTS for the southern right whale (Figure 6-1) therefore it is not expected that noise from the petroleum activity program will impact the southern right whales.	EPO 4 and 5 C 5.1 PS 5.1
	A6: Manage, minimise and mitigate the threat of vessel strike.	Action 1: Assess risk of vessel strike to southern right whales in BIAs 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/.	Refer Section 7.1.7 **Not inconsistent assessment:** The assessment of vessel collision with marine fauna has considered the potential risks to southern right whales. Vessel collisions with southern right whales are highly unlikely to occur, given the low operating speed of support vessels.	EPO 17 C 5.1 PS 5.1
Assessment Summary The National Recovery Plan for the Southern Right Whale has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-16: Assessment against relevant actions of the Grey Nurse Shark Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Grey Nurse Shark Recovery Plan	**Objective 7:** Improve understanding of the threat of pollution and disease to the grey nurse shark	**Action 7.1:** Review and assess the potential threat of introduced species, pathogens and pollutants	Refer Section 6.7.1 **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 6.6.5, 7.1.1, 7.1.2, 7.1.3 and 7.1.8 **Not inconsistent assessment:** The assessment of accidental release of chemicals / hydrocarbons and the assessment of accidental introduction of invasive marine species has considered the potential risks to species, including the grey nurse sharks. Spill risk strategies and response program include management measures, as identified and required.	EPO 7, 11, 12, 13, 18 and 19 C 1.2 7.1, 6.1, 11.1, 11.2, 11.3, 11.4, 11.5, , 12.1, 12.2, 12.3, 13.1, 13.2, 17.1, 17.2, PS 1.2 7.1, 6.1, 11.1, 11.2, 11.3, 11.4, 11.5, , 13.1, 13.2, 17.1, 17.2, 17.3 Detailed oil spill preparedness and response EPOs, EPSs and MC for the Petroleum Activities Program are present in Appendix H Oil Spill Preparedness and Response Strategy Selection and Evaluation
Assessment Summary The Grey Nurse Shark Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-17: Assessment against relevant actions of the Sawfish and River Shark Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Sawfish and River Shark Recovery Plan	**Objective 5:** Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	**Action 5c:** Identify risks to important sawfish and river shark habitat and measures needed to reduce those risks	Refer Sections 7.1.1, 7.1.2 and 7.1.3 **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.	Detailed oil spill preparedness and response EPOs, EPSs and MC for the Petroleum Activities Program are present in Appendix H Oil Spill Preparedness and Response Strategy Selection and Evaluation
	Objective 6: Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life	**Action 6a:** Assess the impacts of marine debris including ghost nets, fishing gear and plastics on sawfish and river shark species	Refer Section 6.7.1 **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 Activities Program.	N/A
Assessment Summary The Sawfish and River Shark Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-18: Assessment against relevant actions of the Marine Debris Threat Abatement Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Debris TAP	**Objective 2:** Understand the scale of marine plastic and microplastic impact on key species, ecological communities and locations	**Action 2.04:** Build understanding related to plastic and microplastic pollution	Refer Section 7.1.4 **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 Activities Program.	EPO 14 C 14.1, 14.2 PS 14.1, 14.2
Assessment Summary The Marine Debris TAP has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

7.3 Cultural Features and Heritage Values Assessment

As described in Section 4.9.1, the identification of cultural values associated with cultural heritage as well as the social, economic and cultural features important to First Nation's people is integral to understanding the environment and any potential impacts and risks to the environment.

In line with its First Nations Communities Policy (Woodside, 2023), Woodside seeks to avoid damage or disturbance to cultural heritage (including intangible heritage) and, if avoidance is not possible, minimise and mitigate the impacts, in consultation with First Nation communities and Traditional Custodians. Mitigation can include any measure or control aimed at ensuring the viability of the intangible cultural heritage and its intergenerational transmission. This can include reducing impacts and risks to environmental features that are associated with intangible cultural heritage (UNESCO, 2003; ICOMOS, 2013).

It is important to note that not all topics raised by First Nations groups/individuals through consultation are considered values for the purpose of the cultural features and heritage values impact assessment below. A number of topics were raised as a general interest in environmental management and ecosystem health, where the group/individual was seeking further information about potential impacts and risks from the Petroleum Activities Program on the receptor. As these interests relate to the maintenance of the natural environment, these are adequately addressed through impact and risk assessments described in Sections 6.6 and 6.7 and not further assessed below.

<table>
<tr><th>Aspect</th><th colspan="4">Cultural Features and Heritage Values</th></tr>
<tr><td>Description of Source Impact/ Risk</td><td colspan="4">The physical presence of subsea infrastructure (production wells, and exploration wells with wellheads), as well as the physical presence of vessels and associated movements in the Operational Area, have the potential to impact or be a risk to cultural features and heritage values.
The Macedon field production system has been in operation since 2013 and has been marked on nautical charts since that time. Inspection, monitoring, maintenance and repair activities may also be conducted on any of the infrastructure within in Production Licence Areas WA-42-L and WA-23-PL.
The Petroleum Activities Program includes production from a series of subsea wells. The worst-case credible hydrocarbon spill scenario described in Section 7.1.1 forms the basis of the EMBA.</td></tr>
<tr><td>Receptor sensitivity</td><td colspan="4">Cultural features and heritage values: High value
Marine mammals: High value species
Marine reptiles: High value species
Fish: High value species</td></tr>
<tr><td>Planned Activities</td><td colspan="4">The potential environmental impact due to planned activities to species that have a cultural feature or heritage value have been summarised below to provide the context of a potential impact significance level to those species to understand any cumulative impact on the cultural feature or heritage value.
<table>
<tr><th>Aspect</th><th colspan="3">Severity Level</th></tr>
<tr><th>Environmental impact assessment to marine species</th><th>Marine mammals</th><th>Marine reptiles</th><th>Fish</th></tr>
<tr><td>6.6.3 Routine Acoustic Emissions: Generation of Noise during Routine Operations</td><td>Minor</td><td>Minor</td><td>Minor</td></tr>
<tr><td>6.6.4 Routine and Non-routine Discharges: Discharge of Hydrocarbons and Chemicals During Subsea Operations and Activities</td><td>Minor</td><td>Minor</td><td>Minor</td></tr>
<tr><td>6.6.5 Routine and Non-routine Discharges: Discharge of Sewage, Putrescible Waste, Greywater, Bilge Water, Drain Water, Cooling Water and Brine</td><td>Minor</td><td>Minor</td><td>Minor</td></tr>
<tr><td>6.6.6 Routine and Non-Routine Atmospheric and GHG Emissions</td><td>Minor</td><td>Minor</td><td>Minor</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Aspect</th><th colspan="4">Cultural Features and Heritage Values</th></tr>
<tr><td></td><td>6.6.7 Routine Light Emissions: Light Emissions from Vessel Operations</td><td>Minor</td><td>Minor</td><td>Minor</td></tr>
<tr><td>Unplanned Activities</td><td colspan="4">The potential environmental risk due to unplanned activities to species that have a cultural feature or heritage value have been summarised below to provide the context of a potential impact significance level to those species to understand any cumulative impact on the cultural feature or heritage value</td></tr>
<tr><td></td><td>Aspect</td><td colspan="3">Risk Rating</td></tr>
<tr><td></td><td>Environmental risk assessment to marine species</td><td>Marine mammals</td><td>Marine reptiles</td><td>Fish</td></tr>
<tr><td></td><td>7.1.1 Unplanned Hydrocarbon Release: Vessel collision</td><td>3</td><td>3</td><td>3</td></tr>
<tr><td></td><td>7.1.2 Unplanned Hydrocarbon Release: Loss of Well Containment</td><td>0.9</td><td>0.9</td><td>0.9</td></tr>
<tr><td></td><td>7.1.3 Unplanned Hydrocarbon Release: Subsea infrastructure</td><td>3</td><td>3</td><td>3</td></tr>
<tr><td></td><td>7.1.4 Unplanned Discharges: Hazardous and Non-hazardous Waste Management</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td></td><td>7.1.5 Physical Presence: Seabed Disturbance from Dropped Objects</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td></td><td>7.1.7 Physical Presence: Vessel Collision with Marine Fauna</td><td>0.9</td><td>0.9</td><td>0.9</td></tr>
<tr><td></td><td>7.1.8 Physical Presence: Introduction of Invasive Marine Species</td><td>9</td><td>9</td><td>9</td></tr>
<tr><td>Impact and Risk Assessment</td><td colspan="4">The Petroleum Activities Program has the potential to impact cultural features and heritage values through the following ways:
<u>Intangible Cultural Heritage</u>
• Songlines: Songlines can become lost, fragmented, or broken when there is a loss of Country or forced removal from Country (Neale and Kelly, 2020:30). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. It is noted that oil and gas infrastructure exists in many areas of the North West Shelf, and that songlines are still acknowledged and recognised. It is inferred that if there were to be any impacts to surviving songlines these would be significantly more likely to be described as qualitative (i.e. “weaken” a songline) rather than binary or absolute (i.e. destroy a songline).
• Creation/dreaming sites; sacred sites; ancestral beings: Activities that physically alter landscape features may be assumed to potentially impact values of creation/dreaming sites, sacred sites or ancestral beings.
• Cultural obligations to care for Country: Environmental impacts may be assumed to impact rights and obligations to care for Sea Country. Exclusion of Traditional Custodians from Sea Country (e.g. by restricting access) or decision-making processes (e.g. by not conducting ongoing consultation) are other potential sources of impact.
• Knowledge of Country/customary law and transfer of knowledge: Direct impact to communities practicing these skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in population. Therefore, the transmission of these skills is expected to be impacted where there are impacts at the species/population level. Limitations on access to sites or disruption/relocation of First Nations communities may have implications for the preservation of First Nations knowledge.
• Connection to Country: Where people are displaced or disrupted (e.g. during colonisation) or where there is a loss of technical skills or environmental knowledge this may damage connection to Country (McDonald and Phillips, 2021).
• Access to Country: Impacts to access to Country may be classified as temporary (e.g. where exclusion zones exist around activities for safety reasons) or permanent (e.g. where infrastructure obstructs access or navigation). Impacts to access to Country can only occur in</td></tr>
</table>

Aspect	Cultural Features and Heritage Values
	areas that were traditionally accessed by Traditional Custodians. As described in Section 4.9.1 this is anticipated to be focussed on areas adjacent to the coast. • Restrictions on Access to Country: Access to the operational area has not been identified as a cultural issue, however some areas within the EMBA may not be culturally appropriate to access. Impacts to this value may occur where spill response access areas that are not appropriate, or in ways that are not consistent with traditional law. • Kinship systems and totemic species: It is assumed that marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood that these relationships do not prohibit people outside of that "skin group" from hunting or eating that same species (Juluwarlu, 2004). It is therefore inferred that the management of totemic or kinship species applies at the species/population level and not to individual plants and animals. • Resource collection: Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, marine species (as resources) will be impacted where there is an impact at the species/population level. <u>Marine Ecosystems and Species:</u> • Marine ecosystems may hold both cultural and environmental value with cultural and environmental values intrinsically linked (DCCEEW, 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. • Coastal landforms • Coastal landforms may have cultural values either through association with intangible values described above (e.g. as features of a songline, physical manifestations of ancestor beings etc.) or as archaeologically prospective locations (e.g. water sources with increased habitation/use, dunes used for burials etc.) ***Intangible Values*** <u>Songlines</u> Management of intangible cultural heritage can include reducing impacts and risks to tangible features that are associated with intangible cultural heritage (UNESCO, 2003; ICOMOS, 2013). Impacts to marine plants, animals and other cultural features associated with songlines might impact the intergenerational transmission of knowledge of songlines when individuals can no longer witness or interact with the cultural features tied to songlines on Country. Therefore, managing songlines may require environmental controls to minimise potential impact to marine fauna at a population level, including migratory routes. Refer to species specific assessment below for further information, in addition to the impact and risk assessment in Section 6.6 and 6.7 respectively. Physical features 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. Songlines can become lost, fragmented, or broken when there is a loss of Country or impact to culturally important physical features (Neale and Kelly, 2020:30). No specific details of songlines within the EMBA have been provided by relevant persons during consultation for this Activity, and no landforms typical of songlines (e.g. rocks, mountains, rivers, caves and hills (Higgins 2021:724)) are anticipated to be impacted by the Activity. <u>Creation/Dreaming Sites; Sacred Sites; Ancestral Beings</u> Woodside has undertaken all reasonable steps to identify creation and dreaming sites, sacred sites, and places associated with ancestral beings within the EMBA. No such sites have been identified. A review of relevant literature has been undertaken which has identified creation, dreaming and ancestral narratives related to the sea more broadly without confirming where (if anywhere) these overlap the EMBA. These references are of a general nature, and do not identify any features or values requiring specific protection or management from the proposed activities. In the literature reviewed, sea serpents or water serpents are common in Aboriginal creation narratives, and several references were identified. The majority of these refer to serpents residing within inland rivers or pools outside of the EMBA (Hayes v Western Australia [2008] FCA 1487, Juluwarlu, 2004). In some versions, the serpent originates from the sea or coast and creates the rivers as it heads inland. Areas of the current coastline and past coastlines at various points along the Ancient Landscape—where the Serpent would have emerged onto the land—are within the EMBA. Areas of the broader ocean where the serpent may have originally lived are not specified. Consultation with Traditional Custodians has not identified impacts on sea serpents from the

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	Petroleum Activities Program. However, by analogy to other water serpent narratives across Australia, possible impact pathways may include interruption of its path by blocking or reducing flows of water, damaging sacred sites such as thalu or rock art sites or depleting water sources. No impacts to water flows (either tidal movement or ocean currents) or depletion of water sources are anticipated from this Petroleum Activities Program. 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. Lack of access to coastally located cultural sites that carry songlines or remain ceremonially important can impact First Nations people's livelihoods and impact their ability to carry out cultural obligations on Country. Knowledge of Country/Customary Law and Transfer of Knowledge Cultural knowledge about Sea Country/customary law and the intergenerational transmission of knowledge are important values identified through consultation, assessments and the literature review. Transfer of knowledge includes continuing traditional practices to pass on practical skills. Direct impact to communities practicing these skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in population—for example traditional fishing methods require the survival of traditional fish resources. Therefore, ensuring the transmission of cultural knowledge may require environmental controls protecting species and migratory pathways at a population level. Refer to species specific assessment below for further information, in addition to the impact and risk assessments in Section 6.6 and 6.7. Connection to Country Connection to Country describes the multi-faceted relationship between First Nations people and the landscape, which is envisioned as having personhood and spirit. No impacts to connection to country are anticipated as a result of exclusion or displacement of Aboriginal communities. Access to Country is discussed below. Access to Country Access to Country, including Sea Country, is necessary for the continuation of other values including caring for Country and the transfer of traditional knowledge. Access is also a value in its own right, as a continuation of traditional Sea Country access and use. Access to areas within the Operational Area may be limited where exclusion zones are established around vessels for safety purposes. Further the exclusion zones around drilling activities are temporary and presence of subsea infrastructure are not anticipated to affect navigation, particularly given the water depth. Access to Country within the EMBA is also not expected to be affected in the highly unlikely event of an unplanned hydrocarbon release. However relevant cultural authorities will be engaged in the event of a spill that may affect them, as specified in Appendix I. Restrictions on Access to Country No information was received which suggested any part of the Operational Area cannot be accessed in a culturally appropriate way. However, some areas of the EMBA may be subject to cultural restrictions on access, or may be culturally dangerous to access in any respect. Access to these areas would only be required in response to an unplanned impact. 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). These relationships are understood to impose obligations on Traditional Custodians. It is understood that these obligations do not impose restrictions on other people generally, but it is considered that impacts to species at a population level may inhibit Traditional Custodians with kinship relationships' ability to perform their obligations where this results in reduced or displaced populations. It is therefore considered that the management of totemic or kinship species applies at the species/population level and not to individual plants and animals. As such, impacts to individual marine fauna is not expected to impact on the totemic or kinship cultural connection. Refer to species specific assessment below for further information, in addition to the impact and risk assessments in Section 6.6 and 6.7. Resource Collection A number of marine species are identified through consultation and literature as important resources, particularly as food sources. 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

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	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. Refer to species specific assessment below for further information, in addition to the impact assessments in Section 6.6 and 6.7. Relevant cultural authorities will be engaged in the event of a spill that may affect them, as specified in Appendix I First Strike Plan. ***Marine Species*** Marine Mammals There are increase ceremonies/rituals for species of animals and plants, important to First Nations, to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is considered that management applies at the species/population level and not to individuals. 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). First Nations groups have expressed interest about whales (Section 4.9.1.7). Inter-generational transmission of cultural knowledge (including songlines) relating to marine mammals may be impacted where changes to population or behaviour at a population level results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO, 2003). As described in the relevant environmental impact and risk assessments Section 6.6 and 6.7, potential impacts to whales are limited to behavioural disturbance to transient individuals, which are not considered to be ecologically significant at a population level, and hence not expected to impact the value of marine mammals, including the transmission of cultural knowledge. The Operational Area does overlap the BIAs for Migration Humpback Whale. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. Marine Reptiles Turtles and their eggs have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) will be impacted where there is an impact at the species/population level. Intangible cultural heritage may also include the transmission of cultural knowledge about marine reptiles, such as nesting areas, hunting areas and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn, 2021). First Nations groups have expressed an interest regarding turtle monitoring programs and migration patterns. Activities that impact turtle populations and their marine environment may have an indirect impact on some First Nations 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 results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO, 2003). As described in the relevant environmental impact and risk assessments in Section 6.6 and 6.7, potential impacts to marine reptiles are predicted to be at an individual level, which are not considered to be ecologically significant at a population level. Impacts will not occur to significant proportions of the populations of the species, nor result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. Further, the Operational Area and EMBA do overlap marine turtle BIAs. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. Fish Fish have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore,

Aspect	Cultural Features and Heritage Values
	these species (as resources) will be impacted where there is an impact at the species/population level. During consultation, fish were identified as important. Inter-generational transmission of cultural knowledge relating to fish may be impacted where changes to population/behaviour results in reduced sightings (e.g. through population decline). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO, 2003). Intangible cultural heritage associated with fish, including inter-generational knowledge regarding fishing techniques and migratory patterns, can be managed by reducing impacts to fish in nearshore marine environments to which this cultural knowledge is intrinsically connected. As described in the relevant environmental impact and risk assessments in Section 6.6 and 6.7 it is expected that fish, sharks and rays may demonstrate avoidance or attraction behaviour however, potential impacts are not considered to be ecologically significant at a population level. The Operational Area and EMBA do not overlap any whale shark BIAs. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. <u>Benthic habitats (seagrass)</u> Through consultation, First Nations groups identified benthic habitats as valuable for their ecological values, particularly seagrass providing a food source for dugongs. As described in the relevant environmental impact and risk assessments in Section 6.6 and 6.7, the potential impacts from the Petroleum Activities Program on benthic habitats is assessed to result in no lasting effect. In terms of risk, as described in Section 6.6 and 6.7 a change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release. Given hydrocarbon characteristics, rapid weathering, 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 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. <u>Shoreline Habitats (coastal vegetation, mangroves)</u> The desktop literature review identified that mangroves are valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002). There is no overlap between the Operational Area and shoreline habitats, and no planned impacts to shoreline habitats from the Petroleum Activities Program. In terms of risk, as described in Section 6.6 and 6.7, a change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release. Given hydrocarbon characteristics, rapid weathering, as well as the response strategies planned to be deployed, an unplanned release is not expected to have a substantial adverse impact on marine ecosystem functioning or integrity. As such, cultural values and intangible cultural heritage associated with shoreline habitats are expected to be maintained. ***Coastal Landforms*** There is no overlap between the Operational Area and coastal landforms, and no planned impacts to coastal landforms from the Petroleum Activities Program. For coastal landforms beyond the Operational Area, the EMBA is driven by an unplanned hydrocarbon release. There is no anticipated impact pathway from the presence of marine diesel on the physical existence of coastal landforms such as hills, waterways or dune systems. Access to Country within the EMBA is also not expected to be affected in the highly unlikely event of an unplanned hydrocarbon release. However relevant cultural authorities will be engaged in the event of a spill that may affect them. As such, cultural values and intangible cultural heritage associated with shoreline habitats are expected to be maintained. ***Conclusion*** The impact and risk assessment has determined that the planned activities are unlikely to result in an impact greater than negligible[57] (F) and unplanned activities are assessed to have a residual risk rating of moderate (or lower). 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 8.2.3 of this EP).

[57] Noting that as the receptor sensitivity is high, the impact significance level is Slight (E).

Demonstration of ALARP				
Control considered	***Feasibility (F) & Cost/Sacrifice (Cs)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Adopted***
Apply a 'living heritage[58]' 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 20.1
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[59]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal.	Implementation of controls for reduced vessel speed around marine fauna can potentially reduce the underwater noise footprint of a vessel and reduces the likelihood of impact or influence on whale activity. Where this control prevents impacts to whales at a population level, it maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).	Benefits outweigh cost/sacrifice.	Yes C 5.1

[58] Living heritage supports community and individual identity. Intangible cultural heritage is 'living heritage' that is inherited from ancestors and passed on to their descendants. It is comprised of many influences, including oral traditions, art, social practices, rituals and ceremonies, cultural knowledge and practices. It is transmitted from generation to generation, and evolves in response to the environment. Woodside applies a 'living heritage' approach to its cultural heritage management. This includes ensuring that Traditional Custodians are given voice to identify interests, transmit information and express concerns. Woodside works with Traditional Custodians to support and follow appropriate cultural protocols, including calling to Country, conducting smoking ceremonies (in areas where this custom is appropriate) and undertaking cultural awareness.

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

Demonstration of ALARP				
Control considered	***Feasibility (F) & Cost/Sacrifice (Cs)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Adopted***
Should it be identified, that relevant cultural authorities may be affected in the unlikely event of a spill, Woodside will engage with those parties as appropriate and in alignment with the Oil Pollution First Strike Plan.	F: Yes. CS: Minimal.	Engaging with relevant cultural authorities that may be impacted by a spill will allow the Traditional Custodians to identify areas of concern. This will also allow Traditional Custodians to confirm areas where access is not culturally appropriate so these can be considered for avoidance, or advice of the necessary requirements to access such areas (such as the gender of respondents or necessary ceremonies).	Benefits outweigh cost/sacrifice.	Yes Adopted, see Appendix I
As marine ecosystems may hold both cultural and environmental value (see Section 4.9), with cultural and environmental values intrinsically linked, in addition to the above controls, the controls in Section 6.6 and 6.7 will reduce impacts to cultural features and heritage values.				
ALARP Statement On the basis of the impact and risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A). Woodside considers the adopted controls appropriate to manage the potential impacts and risks to cultural features and heritage values. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				
Demonstration of Acceptability				
Acceptability Statement: The impact and risk assessment has determined that, given the adopted controls, planned activities are unlikely to result in an impact greater than negligible (F)[60] and unplanned activities are assessed to have a residual risk rating of moderate (or lower). The Petroleum Activities Program and the EMBA do not overlap the Ancient Landscape and they are not anticipated to have a significant impact on MNES (Section 4.3) including marine fauna with a First Nations connection, or traditional use in nearshore areas as defined in Section 4.9.1. Woodside has engaged with Traditional Custodians adjacent to the EMBA to understand the cultural features and heritage values that may occur and potential impacts from the activity. Further opportunities to reduce the impacts have been investigated above. The potential impacts and risks are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks to cultural features and heritage values to a level that is acceptable if ALARP.				

Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[61]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 20 No Impact to cultural features and heritage values greater than a	C 20.1 Apply a 'living heritage management approach. Woodside seeks advice and	PS 20.1.1 Woodside will continue to give voice to Traditional Custodians to identify	MC 20.1.1 Records demonstrate Change Management and Management of

[60] Noting that as the receptor sensitivity is high the impact significance level is Slight (E).
[61] As marine ecosystems may hold both cultural and environmental value (see Section 4.9.1), with cultural and environmental values intrinsically linked, in addition to the specific controls for cultural features and heritage values, the controls and performance standards in section 6.7 and 6.8 will reduce impacts to cultural features and heritage values.

Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[61]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
consequence level of F from the Petroleum Activities Program	incorporates Traditional Custodian cultural knowledge across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	interests, transmit information and express concern	Knowledge processes have been followed where new controls or management
		PS 20.1.2 Woodside will assess and where deemed practicable will implement appropriate cultural protocols by Traditional Custodians	MC 20.1.2 Records demonstrate Woodside implemented cultural protocols as requested.

8. IMPLEMENTATION STRATEGY

8.1 Overview

Regulation 22 of the Environment Regulations requires an EP to contain an implementation strategy for the activity. The implementation strategy for the Petroleum Activities Program confirms fit-for-purpose systems, practices and procedures are in place to direct, review and manage the activities so that environmental risks and impacts are continually being reduced to ALARP and are acceptable, and that EPOs and EPSs outlined in this EP are achieved.

Woodside, as Operator, is responsible for ensuring that the Petroleum Activities Program is managed in accordance with this implementation strategy and the Woodside PetDW Management System (see Section 1.9).

8.2 Systems, Practice and Procedures

All operational activities are planned and carried out in accordance with relevant legislation and internal environment standards and procedures identified in this EP (Section 5).

Processes are implemented to verify controls to manage environmental impacts and risks to:

- a level that is ALARP and acceptable
- meet EPOs
- comply with EPSs defined in this EP.

The systems, practices and procedures that will be implemented are listed in the EPSs contained in this EP. Document names and reference numbers may be subject to change during the statutory duration of this EP; this is managed through a change register and management of change (MoC) process (Section 8.2.3). Further information regarding some of the key systems, practices and procedures relevant to implementation of this EP is provided below.

8.2.1 Woodside PetDW Management System

The Woodside PetDW Management System defines the boundaries within which all activities are conducted. It provides a structured framework to set common requirements, boundaries, expectations, governance and assurance for all activities. It also supports accountabilities and responsibilities as defined in the organisational structure. The overarching objective of the Woodside PetDW Management System is to aspire to zero harm to people, communities and the environment, and achieve leading industry practice.

This EP has been designed to meet the environmental requirements of the Woodside PetDW Management System framework and establishes the foundation for continual improvement through the application, monitoring and auditing of consistent requirements across all parts of the Petroleum Activities Program including;

- Identification of statutory obligations and commitments to ensure maintenance of licence to operate
- Implementation of petroleum risk management processes, including this EP
- Scheduled monitoring and auditing of control implementation
- Completion of reviews, and reporting outcomes of these reviews.

8.2.2 Risk Management

Risk management processes and practices are applied on an ongoing basis to design, production and maintenance activities for the Macedon activity to manage risks to personnel, assets and the environment.

Potential environmental consequences and impacts from the Macedon operations are risk assessed and controlled in accordance with the Woodside risk management processes described in Section 2.6.3.1 of this EP (Environmental Risk Management Methodology).

The results of the Macedon ENVID are described in Section 5 and in the Environmental Impacts and Risk Register. This register, in conjunction with the EP, provides a demonstration that environmental risks have been identified, and that appropriate controls are in place to manage those risks to a level that is acceptable and ALARP throughout the life of the field.

A number of other risk management tools and techniques are used for the Macedon activity to manage environmental and other risks on a routine basis during operational, maintenance and inspection tasks. Examples include:

- the processes outlined in Section 2
- risk management tools including Hazard Identification and Risk Assessments and Level 2 Risk Assessments, Operational Risk Assessments, the technical MoC system (Section 8.2.3), and Step back 5 x 5
- integrity review studies, HAZIDs and Hazard Operability studies.

These tools, risk and integrity management practices are described further in the Macedon Facility Safety Case and the WOMP.

In addition, other risk sub-processes and practices are also applied within Woodside on an ongoing basis to manage different types of risk. A summary of those relevant to the Petroleum Activities Program is provided below. Woodside's risk management processes (refer to Section 2.6.3.1), along with the supporting risk sub-processes and practices discussed in this section, ensure the environmental impacts and risks of the activity continue to be identified and reduced to a level that is ALARP.

8.2.2.1 Management of Risks – Contracting and Procurement

Suppliers and contractors play a significant role in meeting the resource needs of Woodside's operations, including the facility operations. Effective management of environmental risks in contracts is achieved by setting clear expectations and managing environmental risks throughout the duration of the contract.

The Health, Safety and Environment in Contracts and Procurement Procedure establishes the HSE requirements to manage contractors performing tasks in relation to the plant and pipeline. The Health, Safety and Environment in Contracts and Procurement Procedure ensures contractors are informed of their requirement to comply with the requirements of the Woodside (PetDW) HSE Management system. Third-parties are assessed under the process prior to being engaged. This process includes, but is not limited to an assessment of HSE, management and maintenance systems.

8.2.2.2 Management of Risks – Well Integrity

Wells are managed throughout their lifecycle in line with the Well Lifecycle Management Procedure. This procedure provides the basis for ensuring well integrity in accordance with the PSM Procedure.

In addition, wells are required to have a regulator accepted WOMP to demonstrate that well integrity risks are managed to ALARP levels.

Management of operating wells can be formally transferred from Operations to the Global Wells and Seismic (GWS) team for activities such as well intervention and workover. Where activities are undertaken by GWS, the risks are managed under the GWS Risk Management Procedure, which specifically addresses the risk of loss of containment from a well or well related equipment. This procedure supplements the Woodside Risk Management Procedure.

8.2.2.3 Management of Risks – Marine Services

Woodside's Marine Services Function provides a platform for the conduct of safe and efficient Marine Operations across Woodside through the Marine Services Management. A set of procedures that support vessel assurance and management (including HSE and quality management) are in place to ensure marine operations are conducted in a safe and efficient manner, and in accordance with regulatory requirements.

More details on vessel assurance and the communication of environment requirements to vessels are provided in Section 8.8.2.

8.2.3 Change Management

Change management is used where there is no existing approved business baseline, such as a process, procedure or accepted practice, or where conformance with an approved baseline is not possible or intended; for example, due to equipment fault or failure or a recently discovered issue which will take time to rectify. Change management is also used when the baseline is changed (e.g. the process is modified). It applies to management of temporary, permanent, planned or unplanned change encompassing one or more of the following:

- plant (equipment, plant, technology, facilities, operations or materials)
- projects (budget, schedule)
- people (organisation structure, performance, roles)
- process (WMS content, processes, procedures, standards, legislation, information).

8.2.3.1 EP Management of Change and Revision

Woodside's Environmental Approval Requirements Australia Commonwealth Guideline provides guidance on the Environment Regulations that may trigger a revision and resubmission of the EP to NOPSEMA. The document also provides guidance on what may constitute as new source-based or receptor-based impacts and risks, or a significant increase in an existing source of environmental risk (to provide context in determining if EP resubmission is required under Regulations 19 and 39 of the Environment Regulations).

Minor EP changes, where a review of the activity and the environmental risks and impacts of the activity shows the changes do not trigger regulatory requirements to resubmit the EP, will be considered a 'minor revision'.

Changes with potential to influence minor or technical changes to the EP text are tracked in MoC records, project records, or the EP Updates Register and incorporated during internal updates of the EP or the five-yearly revision.

In accordance with the requirements of Regulation 41 of the Environment Regulations, Woodside will also submit to NOPSEMA a proposed revision to this EP at least 14-days before the end of each period of five years, commencing on the day on which the original and subsequent revisions of the EP are accepted under Regulation 35 of the Environment Regulations.

8.3 Woodside Decommissioning Framework

Decommissioning is a planned activity for the offshore oil and gas industry. Current best practice is for decommissioning to include:

- designing for decommissioning during the development phase of projects / facilities;
- maintaining and removing property, equipment and infrastructure, such as a facility or a pipeline, and plugging wells associated with a petroleum activity;

- assessing decommissioning options and opportunities during the operational life of the facility leading up to cessation of production;
- selecting, developing and planning the selected decommissioning option;
- executing decommissioning plans; and
- restoring the marine environment.

This assists with compliance with Section 572(3) of the OPGGS Act, which requires titleholders to remove property from the title area when it is neither used, nor to be used, in connection with the operations. Under section 572(7) of the OPGGS Act, the property removal requirements under section 572(3) of the OPGGS Act have effect subject to any other provision of the OPGGS Act, the regulations, directions given by NOPSEMA or the responsible Commonwealth Minister under Chapter 3 or Chapter 6 of the OPGGS Act, and any other law. Under section 270(3) of the OPGGS Act, before title surrender, all property brought into the surrender area by any person engaged or concerned in the operations authorized by the permit, lease or licence must be removed or cause to be removed from the surrender area to the satisfaction of NOPSEMA, or arrangements that are satisfactory to NOPSEMA must be made in relation to the property. Sections 572(7) and 270(3) of the OPGGS Act provide scope for in-situ decommissioning and other arrangements to be made where it can be demonstrated that the risks and impacts are ALARP and acceptable as well as comply with all other Acts and legislation.

8.3.1 Decommissioning in Operations

Asset specific decommissioning plans are generally developed prior to cessation of production. Planning includes redundant infrastructure as well as structures coming to the end of production and the identification of decommissioning critical systems to enable removal. Appropriate maintenance plans are developed and implemented to ensure decommissioning critical systems meet the requirements to facilitate removal.

8.3.2 Facility Decommissioning Planning

Decommissioning planning generally commences 2-10 years prior to Cessation of Production (CoP) (**Figure 8-1**). The timeframe selected for decommissioning planning depends on the complexity of the facility and infrastructure requiring decommissioning.

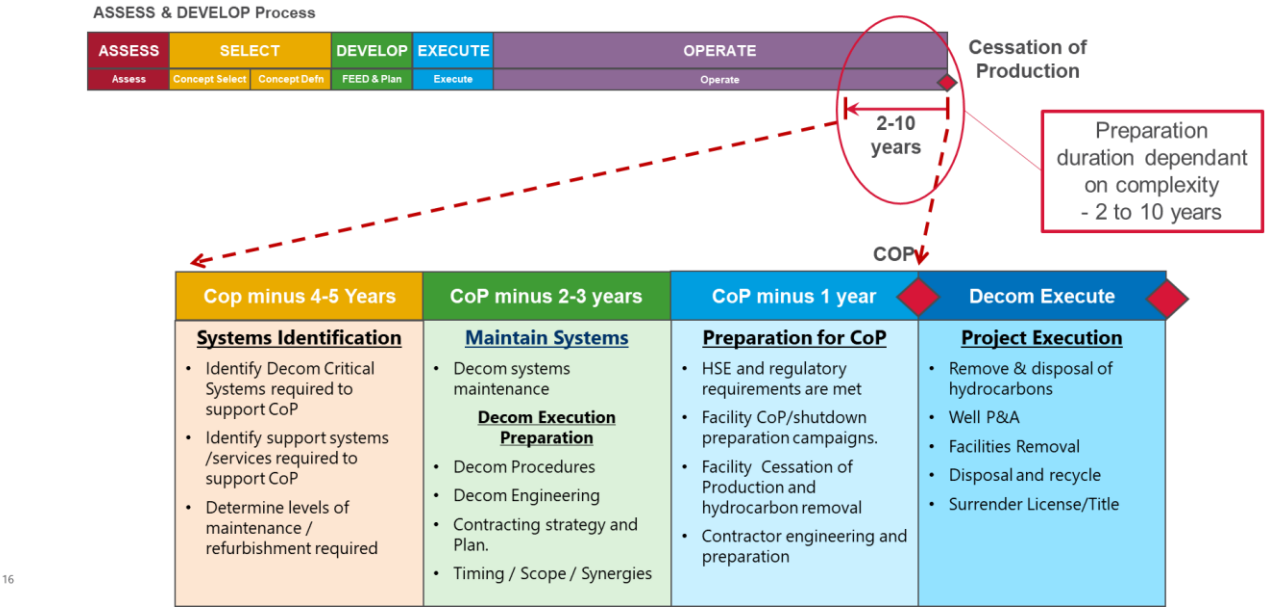

Figure 8-1: Woodside's process for decommissioning planning

8.3.3 Inventory of Property

An overview of all Woodside property within the petroleum title that this EP relates to, including property that is outside the scope of this EP, is summarised in Table 8-1.

Property inventories are maintained for all Woodside assets and updated with additional property brought into the field in accordance with the asset management system.

The petroleum title also contains a number of exploration wells that have been abandoned with wellheads removed. As there is no remaining infrastructure associated with these wells they have not been included in Table 8-1.

Table 8-1: Inventory

Infrastructure	Description	Status
WA-42-L		
Pyrenees subsea infrastructure and wells	Operated, managed and detailed within the Pyrenees Operations EP (NOPSEMA Doc A680737)	
Macedon-7	Production wells	Online
Macedon-8A		
Macedon-9		
Macedon-10		
Macedon-4	Appraisal well	Plugged and suspended, wellhead in place
West-Muiron-4	Exploration well	Plugged and suspended, wellhead in place
WA-23-PL		
Macedon pipeline	Pipeline	Online

8.3.4 Macedon Decommissioning Strategy

Cessation of production for the Macedon field is estimated to be 2035, however this is subject to change.

In line with Woodside's decommissioning planning process outlined above, an Asset Closure Management Plan has been prepared for Macedon operations, and includes infrastructure in WA state waters, on state land and a number of exploration wells.

Decommissioning of infrastructure in Commonwealth waters is being undertaken in two phases:

- Decommissioning Planning (commenced)
- Decommissioning Execution (after cessation of production)

8.3.5 Decommissioning Planning Activities

8.3.5.1 Production Infrastructure

Planning for decommissioning has commenced and will continue over the life of this EP with activities over the next 5 years (the life of this EP). Planning for decommissioning mostly includes desktop studies and engineering design but may also leverage data from inspections and other activities undertaken during IMMR scopes within the scope of the Petroleum Activities Program.

It is anticipated that detailed decommissioning plans will be available to be provided in the next revision of this EP, which will be due to NOPSEMA approximately 5 years from cessation of production (according to the current end of field life, which is subject to change).

During the decommissioning planning phase all infrastructure will be managed and maintained within the scope of this EP to meet Woodside's obligations under Section 572.

No specific monitoring has been proposed to be undertaken to support the requirements of Section 270 as the petroleum activities program does not propose to further contribute to impacts to the sediments and seabed as assessed in Section 6 of this EP.

8.3.5.2 Exploration Wells

Two exploration wells that are temporarily abandoned are within the scope of this EP. Both of these wells are plugged for abandonment however, they have not yet been approved for abandonment by NOPSEMA.

Woodside is currently undertaking assessments of these wells and preparing information to be submitted to NOPSEMA in line with the accepted WOMPs to abandon the wells. These activities are in progress and it is anticipated that relevant documentation will be submitted to NOPSEMA within 12 months. However, this timing is subject to change depending on the outcomes of relevant assessments.

8.3.6 Decommissioning Execution Activities

8.3.6.1 Production Infrastructure

Decommissioning execution activities are expected to commence as follows:

- Plug and abandonment of production wells: within three years of cessation of production
- Decommissioning of subsea equipment: within five years of cessation of production.

The timing of the main activities related to decommissioning planning for the Macedon Field Production System are subject to change, however the current schedule is outlined in Figure 8-2 below for context.

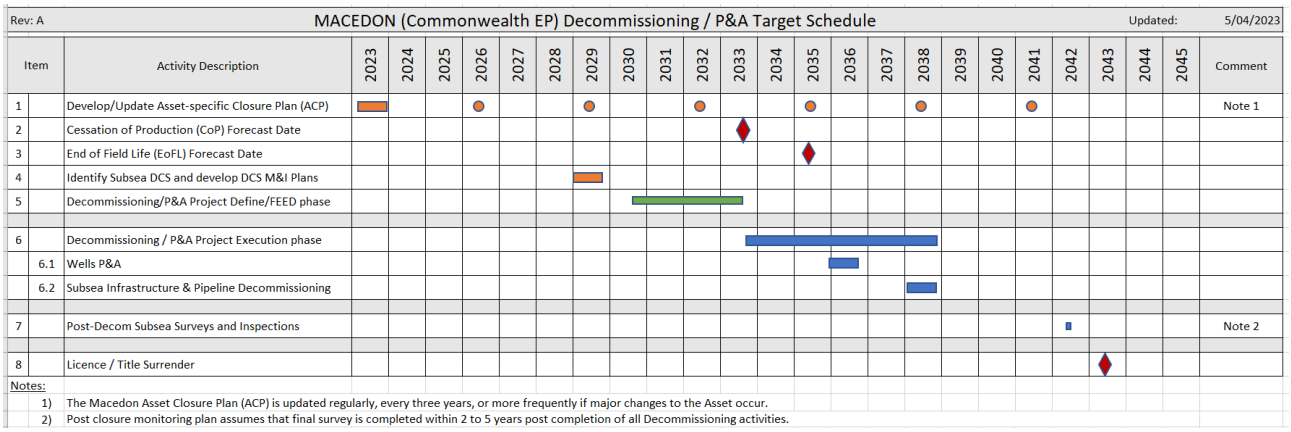

Figure 8-2: Macedon Decommissioning / P&A Target Schedule

8.3.6.2 Exploration Wells

Decommissioning of the exploration wellheads cannot progress until the wells have been accepted as permanently abandoned. Depending on the outcomes of barrier assessments the wells will either require plugging and abandonment activities, or they will be approved as candidates for decommissioning. Timing of these activities is subject to change and highly dependent on assessments underway by Woodside and NOPSEMA, however, potential plug and abandonment and/or decommissioning campaigns are currently being planned for 2027.

Current planning for wellhead decommissioning is premised upon removal, with consideration of the principles of ALARP and acceptability. Once wells have been accepted as permanently abandoned

and the decommissioning activity is defined, an EP will be submitted for the wellhead decommissioning activity. These wells with wellheads are continuing to be maintained until decommissioned.

Should the wells require further plugging and abandonment activities, these will be carried out under a separate, activity specific EP.

8.4 Organisation Structure

The following Woodside organisational structure provides leadership and direction for Macedon operations and environmental performance:

- the Executive Vice President (EVP) Australian Operations reports to the Chief Executive Officer
- the FPSOs and Macedon Vice President (VP) report to the EVP
- the Asset Manager reports to the VP FPSOs and Macedon
- the Macedon Person in Charge (PIC) reports to the Asset Manager
- the Reliability & Integrity Manager reports to the VP FPSOs and Macedon
- the Principal Subsea Engineer reports to the Reliability & Integrity Manager – is responsible for managing integrity and maintaining operability of subsea systems
- the functional support teams report to the corresponding Business Unit VP
- Production facilities are supported by a team of environmental professionals who report to the Environment Manager - Australian Operations
- facilities are supported by other Woodside functional teams including:
    - **HSE** – provides specific guidance and access to specialist HSE resources including assistance for governance and training, as well as guidance on Woodside HSE standards
    - **Global Wells and Seismic** – ensures the safe planning and execution of drilling (note drilling is excluded from the scope of this EP), completion and work over operations
    - **Projects** – responsible for the engineering, construction and execution of small projects on operational facilities to ensure ongoing integrity and safe operation
    - **Marine Group** – responsible for chartering vessels to support Woodside's offshore production facilities including vessels to aid emergency response
    - **Aviation Group** – provides personnel transport, material transport, emergency evacuation and search and rescue capabilities.

8.5 Roles and Responsibilities

As required by Regulation 22(4), this section of the implementation strategy establishes a clear chain of command that sets out the roles and responsibilities of personnel in relation to the implementation, management and review of the EP, ranging from senior management to operational personnel.

Key roles and responsibilities for Woodside and Contractor personnel in relation to the implementation, management and review of this EP are described below in Table 8-2. Roles and responsibilities for hydrocarbon spill preparation and response are outlined in Table 8-2 and the Woodside Oil Pollution Emergency Arrangements (Australia). Roles and responsibilities for facility emergency response are outlined in the Macedon Facility Safety Case and are consistent with the Macedon Emergency Response Plan (ERP).

It is the responsibility of all Woodside employees and contractors to apply the Woodside Environment and Biodiversity Policy (Appendix A) in their areas of responsibility.

Table 8-2: Roles and responsibilities

Title (role)	Environmental Responsibilities
All Personnel	
All facility-based personnel and onshore support personnel	• understand the Woodside standards and procedures that apply to their area of work • understand the environmental risks and control measures that apply to their area of work • carry out assigned activities in accordance with approved procedures and the EP • follow instructions from relevant supervisor with respect to environmental protection • cease operations that 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	
Macedon Asset Manager	<u>Systems, Practices and Procedures</u> • accountable for ensuring all necessary regulatory approvals are in place to operate • approves (decides on) the content to be contained in the EP • accountable for managing the asset throughout its operations in accordance with legislative/regulatory requirements (including this EP) and WMS requirements. • responsible for continuous improvement of operations of the facility, including environmental performance <u>Monitoring, Auditing, Non-conformance and Emergency Response</u> • decides on technical decisions where required based on assessed current level of risk • accountable for incident notification, reporting and investigation in line with regulatory requirements, the WMS and EP requirements
Macedon Person In Charge	<u>Systems, Practices and Procedures</u> • responsible for the operation of the facility in accordance with legislative/regulatory requirements (including this EP) and the WMS • decides on technical decisions where required based on assessed current level of risk • accountable for aspects of integrity management <u>Monitoring, Auditing, Non-conformance and Emergency Response</u> • accountable for conformance to production Operations processes
Environment Manager	<u>Systems, Practices and Procedures</u> • facilitate operations environmental approval documentation and timely submission in accordance with regulatory requirements

Title (role)	Environmental Responsibilities
	• develop and maintain appropriate Production environmental processes and procedures Monitoring, Auditing, Non-conformance, and Emergency Response • Monitor and communicate to internal stakeholders all relevant changes to legislation, policies, regulator organisation that may impact the EP or business • facilitate review of the EP, including five-yearly revision and in relation to any technical decisions or proposed changes to operations
Production Environment Adviser	Systems, Practices and Procedures • manage change relevant to the EP in accordance with the Regulations and the EP Resourcing, Training and Competencies • liaise with Woodside contractors and Subsea Support Bessel crew to communicate and ensure their understanding of IMMR related requirements under this EP Monitoring, Auditing, Non-conformance and Emergency Response • ensure environmental monitoring, offshore inspections, and reporting is undertaken as per the requirements of this EP • coordinate and monitor closeout of corrective actions • ensure environmental inspections/audits are undertaken as per the requirements of the EP • ensure environmental incident reporting meets regulatory requirements (as described within the EP) and WMS requirements
Principal Subsea Engineer	Systems, Practices and Procedures • ensure IMMR process undertaken in line with EP commitments • manage IMMR change requests for the activity and notify the Production Environment Adviser of any scope changes in a timely manner • responsible for governance of IMMR related activities for Subsea Support Vessels. Resourcing, Training and Competencies • provide sufficient resources to implement the EP requirements Monitoring, Auditing, Non-conformance, and Emergency Response • monitor and close out corrective actions raised from IMMR environmental inspections/audits or incidents
Corporate Affairs Adviser	Systems, Practices and Procedures • stakeholder identification and consultation • reporting on consultation • ongoing stakeholder liaison as required.
Woodside Marine Services Function	• responsible for pre-charter assurance for all contracted vessels

Title (role)	Environmental Responsibilities
	• conduct of ongoing operational assurance of vessels contracted through Woodside Marine, to confirm vessels operate in compliance with relevant legislation, rules and Woodside Marine Charterers Instructions in order to be able to meet safety, navigation, operational and emergency response requirements.
Contractor Sponsors	<u>Systems, Practices and Procedures</u> • ensure implementation of EP for the contractor's scope of work <u>Resourcing, Training and Competencies</u> • ensure contractors have adequate environmental capability in order to execute their respective scopes of work • review contractor environmental performance as required.
Vessel-based Personnel	
Vessel Master of Subsea Intervention Vessel	<u>Systems, Practices and Procedures</u> • understand and manage HSE aspects of the vessel, including environmental requirements • communicate with OIM as required regarding potential environmental risks applicable to vessel activities • ensure vessel meets quarantine requirements <u>Monitoring, Auditing, Non-conformance and Emergency Response</u> • notify AMSA and other authorities of any incidents as per maritime requirements • provide, as requested by Woodside, copies of documents, records, reports and certifications (i.e. fuel use, ballast exchanges, waste logs, etc.) in a timely manner to assist in compliance reporting • ensure the vessel's Emergency Response Team have sufficient training to implement the vessel's SOPEP • ensure all emergency and SOPEP drills are conducted • ensure that vessel procedures are followed in the event of an emergency or spill • immediately notify the Woodside Representative of any environmental incidents.
Woodside Site Representative	<u>Systems, Practices and Procedures</u> • ensure relevant management measures in this EP are implemented on the Subsea Intervention Vessel <u>Resourcing, Training and Competencies</u> • ensure Subsea Support Vessel induction attendance is recorded. <u>Monitoring, Auditing, Non-conformance and Emergency Response</u> • ensure periodic environmental inspections are completed • ensure environmental incidents or breaches of EPOs, EPSs or MCs are reported in accordance with Woodside and regulatory requirements

8.6 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 Manager Global Heritage.
- 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 Manager Global Heritage.
- Woodside's Manager Global Heritage 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 First Nations underwater cultural heritage, Woodside's Manager Global Heritage 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 UCH Act, Woodside's Principal Heritage Advisor must notify the Minister responsible for the UCH Act, the DCCEEW underwater archaeology section, the Australasian Underwater Cultural Heritage Database via DCCEEW, 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 ATSIHP Act.
- Work must not recommence in the vicinity of the potential heritage object until Woodside's Manager Global Heritage provides written approval. Woodside's Manager Global Heritage 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.

8.7 Training and Competency

As required by Regulation 22 (5), this section of the implementation strategy includes measures that ensure all personnel associated with operating the Macedon activity are aware of their EP related responsibilities, and that all relevant personnel have appropriate competencies and training.

Training is undertaken to ensure employees and contractors whose work may impact on the environment have the necessary awareness, knowledge and competence appropriate for their role.

Different levels of training are undertaken in relation to managing environmental risks and impacts for the offshore subsea infrastructure and associated subsea support vessel based IMMR activities, as follows:

- operations competency framework training
- permit to work training
- production environmental leadership training and environment awareness training
- emergency and hydrocarbon spill response training
- inductions for subsea IMMR (vessel based) personnel
- Incident reporting
- Unexpected Finds Procedure and reporting requirements (Section8.6).

Records for Woodside production personnel, in relation to the above listed training, are maintained in Woodside's learning management system. Contractor training records are also maintained.

Competence of operations personnel can be reviewed via online dashboards.

8.7.1 Emergency and Hydrocarbon Spill Response Training

All operations personnel involved in crisis and emergency management are required to commit to ongoing training, process improvement and participation in emergency and crisis response (both real and simulated), including emergency drills specific to potential incidents at the Macedon facility. Training includes task specific training and role-based training and 'on the job' experience (i.e. participation in crisis or emergency management exercises). Roles based training is further described in Section 12.1.

An overview of Woodside's hydrocarbon spill response training and competency requirements are provided in dashboards for key responder roles. The roles are consistent with Woodside's crisis and emergency management incident control structure.

Woodside Hydrocarbon Spill Preparedness Advisor(s) are responsible for maintaining hydrocarbon spill preparedness competency. This includes the identification and development of approved competency and non-competency-based courses, identification of relevant personnel required to undertake training and ensuring training records are maintained. Minimum Woodside capabilities will continue to be identified and documented.

8.7.2 Subsea IMMR Activity Environmental Awareness

At the beginning of, and during, a new subsea IMMR activity, the subsea support vessel crew including contractor crew, Woodside representatives and other relevant personnel are required to undertake a vessel induction before commencing work. This induction covers HSE requirements for the vessel and IMMR activities, and as required environmental information specific to the activity location. The induction may cover the following environmental information:

- adherence to standards and procedures, and the use of Job Hazard Analysis and permit to work hazard identification and management process
- spill management including prevention, response and clean-up, location of spill kits and reporting requirements
- waste management requirements and location of bins
- reporting of marine fauna, location of forms and charts
- chemical management requirements.

All personnel who undertake the project induction are required to sign an attendance sheet which is retained.

Regular HSE meetings are held on subsea support vessels with crew. During these meetings, any environmental incidents are reviewed, and environmental awareness material presented.

8.8 Monitoring, Auditing, Management of Non-conformance and Review

Regulation 22(6) 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 Macedon facility 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.

8.8.1 Monitoring

Woodside and its Contractors undertake a program of periodic monitoring during the Petroleum Activities Program. This information is collected using the tools and systems outlined below based on the EPOs, controls, EPSs and MCs in this EP. Environmental aspects are integrated into Woodside-wide functional and asset review and assurance processes, which deliver effective governance. This integration of environmental controls into appropriate parent systems and processes includes PSM (Section 8.2.2) contractor management (Section 8.2.2) and marine assurance (Section 8.8.2.3), and provides multi-faceted assurance of routine implementation.

The tools and systems collect, as a minimum, the data (evidence) referred to in the MCs in Sections 6.6 and 6.7. The collection of this data will form part of the record of compliance maintained by Woodside and form the basis for demonstrating that the EPOs and EPSs are met. Compliance is summarised in a series of routine reporting documents (refer to Section 9.3.3.2).

The following tools and systems to monitor environmental performance, (including collection of evidence of compliance with controls), where relevant, include:

- environmental emissions/discharge reporting systems that record volumes of planned discharges to ocean and atmosphere, e.g. via the Production Allocation System and process historian database – a summary of emissions and discharges monitoring that is undertaken during the Petroleum Activities Program is provided within Table 8-3
- monitoring of progress against the Asset scorecard for KPIs (Section 8.8.4.2)
- routine internal reporting (as described in Section 9.3.2) and routine external annual compliance reporting (as described in Section 9.3.3)
- internal auditing and assurance program (as described in Section 8.8.2).

Collectively, these systems/tools involve collection of evidence of compliance with controls. Throughout the Petroleum Activities Program, Woodside continues to identify new source-based risks and impacts through the Monitoring and Auditing systems and tools described above and within Section 6.

Other examples of assurance tasks implemented through the EP include (as an example);

- start of shift vessel operator walk arounds
- permit to work hazard, risk management check list, area sign-on, and permit audits
- annual critical control performance reviews

- ongoing maintenance performance assurance (e.g. conformance dashboard)
- management system performance audit reviews (e.g. MSPSs) (Section 8.8.2)
- data gathering and governance dashboard presentations (e.g. Woodside Integrated Risk and Compliance System).

8.8.1.1 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). Relevant knowledge is defined as:

- Environmental science supporting the description of the existing environment
- Socio-cultural environment and stakeholder information
- Environmental legislation.

Under the Oil Spill Scientific Monitoring Program preparedness, an annual review and update to the environmental baseline studies database is completed and documented. Periodic location-focused environmental studies and baseline data gap analyses are completed and documented. Any subsequent studies scoped and executed as a result of such gap analysis are managed by the Environment Science Team and tracked via the Corporate Environment Baseline Database.

8.8.1.2 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 (Section 8.2.3).

Table 8-3: Summary of emissions and discharges monitoring for the Petroleum Activities Program

Category	Parameter to be Monitored/Reported	Monitoring Frequency	Monitoring Equipment/Methodology	EP Reference
Planned Emissions				
Atmospheric Emissions from vessel MDO combustion	Greenhouse, energy and criteria pollutants	Per IMMR campaign	MDO usage by vessels	Section 6.6.6
Planned Discharges				
Discharge of hydrocarbons and chemicals during subsea IMMR activities	Volumes of hydrocarbons and chemicals released subsea	As required, during IMMR activities (activity specific)	Estimates based on known volumes pumped and ROV observation	Section 6.6.4
Discharge of cooling water	Total Residual Chlorine	Periodically	Total Residual Chlorine testing	Section 6.6.5
Waste recycling and disposal	Quantities of solid and liquid wastes disposed of onshore	Ongoing	Facility waste manifest	Section 6.7.1
Unplanned Emissions and Discharges				
Unplanned emissions and discharges	Nature of release	As required	HSE Event Reporting System	Section 6.7

8.8.2 Auditing

8.8.2.1 Operations Assurance

To provide confidence, based on evidence commensurate with risk, that business objectives are met, business activities are performed and risks are managed, assurance activities are performed.

Environmental assurance activities are conducted on a regular basis to help:

- verify environmental risks and potential impacts are being managed in accordance with the EPOs and EPSs detailed in this EP
- monitor, review and evaluate the effectiveness of the performance outcomes and standards detailed in this EP
- verify effectiveness of the EP implementation strategy
- identify potential non-conformances.

The outputs of the assurance process are corrective actions that feed the improvement process. Therefore, assurance is a key driver of continuous improvement.

8.8.2.2 Annual Offshore Inspection/Desktop Review

An inspection/review of the offshore activity is undertaken every calendar year by the Production Environment Team, via desktop review. Selected risk areas/activities are inspected to review environmental performance against the EPOs and EPSs and verify that control measures are effective in reducing the environmental risks and impacts of the activity to an ALARP and acceptable level.

The inspection/review also includes review of conformance with selected aspects of the EP implementation strategy. All risk sources/activities applicable to the offshore facility will be reviewed over a three-year rolling period. Records of findings and records of close-out of any corrective or improvement actions are maintained (close-out is tracked in Woodside's action tracking system).

8.8.2.3 Marine Assurance

Woodside's marine assurance is managed by the Marine Assurance Team of the Logistics Function Marine Services Group 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.

Woodside's Marine Offshore Assurance process is mandatory for all vessels (other than Tankers and Floating Production Storage and Offloading vessels) that are chartered directly by or on behalf of Woodside, including for short term hires (i.e. <3 months in duration). It defines applicable marine offshore assurance activities, ensuring all vessel operators operate seaworthy vessels that meet the requirements for a defined scope of work and are managed with a robust Safety Management System.

The process is multi-faceted and encompasses the following marine assurance activities:

- Safety Management System Assessment
- Dynamic Positioning (DP) System Verification
- Vessel Inspections
- 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
- OCIMF OVID Inspection
- IMCA CMID Inspection
- Marine Warranty Survey.

Upon completion of the marine assurance process, to confirm that identified concerns are addressed appropriately and conditions imposed are managed, the Woodside Marine Assurance Team will issue the vessel a statement of approval. Should a vessel not meet the requirements of the Woodside Marine Offshore Vessel Assurance Process and be rejected, there does exist an opportunity to further scrutinise the proposed vessel.

OVID inspections are objective in nature and reflect what was observed by the Inspector while conducting the inspection. The inspection provides observations as opposed to non-conformities.

Where an OVID vessel inspection and/or OVMSA Verification Review is not available and all reasonable efforts based on time and resource availability to complete a vessel OVID inspection and/or OVMSA Verification Review are performed (i.e. short term vessel hire), the Marine Assurance Specialist Offshore may approve the use of an alternate means of inspection, known as a risk assessment.

Risk Assessment

Woodside conducts a risk assessment of vessels where either an OVMSA Verification Review and/or an OVID vessel inspection cannot be completed. This is not a regular occurrence and is typically used when the requirements of the assurance process are unable to be met or the processes detailed are not applicable to a proposed vessel(s). The Marine Vessel Risk Assessment will be conducted by the Marine Assurance Specialist Superintendent, or the nominated deputy, where the vessel meets the short term hire prerequisites.

The risk assessment is a semi-quantitative method of determining what further assurance process activity, if any, is required to assure a vessel for a particular task or role. The process compares the level of management control a vessel is subject to against the risk factors associated with the activity or role.

Several factors are assessed as part of a vessel risk assessment, including:

- Management control factors:
    - Company audit score (i.e. management system)
    - vessel HSE incidents
    - vessel Port State Control deficiencies
    - instances of Port State Control vessel detainment
    - years since previous satisfactory vessel inspection
    - age of vessel
    - contractors' prior experience operating for Woodside.

- Activity risk factors:
    - people health and safety risks (a function of the nature of the work and the area of operation)
    - environmental risks (a function of environmental sensitivity, activity type and magnitude of potential environment damage (e.g. largest credible oil spill scenario))
    - value risk (likely time and cost consequence to Woodside if the vessel becomes unusable)
    - reputation risk
    - exposure (i.e. exposure to risk based on duration of project)
    - industrial relations risk.

The acceptability of the vessel or requirement for further vessel inspections or audits is based on the ratio of vessel score to activity risk. If the vessel management control is not deemed to appropriately manage activity risk, a satisfactory company audit and/or vessel inspection may be required before awarding work.

The risk assessment is valid for the period a vessel is on hire and for the defined scope of work.

8.8.3 Management of Non-conformance (Internal)

Woodside employees and Contractors are required to internally report all environmental incidents and hazards, including potential non-conformances with EPOs and EPSs in this EP.

The Health, Safety and Environment Event Reporting and Investigation Procedure defines how incidents and hazards are internally reported. Key requirements are set out using an Event Report Form, which includes details of the event, immediate action taken to control the situation, and corrective actions to prevent reoccurrence. An internal online database is used for the recording and reporting of these events. Corrective actions are monitored using the online database and closed out in a timely manner.

The classification, reporting, investigation and actioning of environmental incidents and hazards is undertaken in accordance with the Health, Safety and Environment Event Reporting and Investigation Procedure supported by the HSE Event Reporting Guideline. Event bulletins may be used for communication of learnings from significant events.

Non-conformances with EPOs and EPSs are also internally reported and investigated in accordance with Regulatory Compliance Management Procedure, supported by the Regulatory Compliance Management Guideline.

External regulatory reporting requirements for this activity are outlined in Section 9.3 of this EP.

8.8.4 Review

8.8.4.1 Environmental Risk Review

Woodside risk management processes include risk review, are described in Sections 2 and 8.2.2 and are applied on a day-to-day basis. The Facility Environmental Impacts and Risk Register must be reviewed and updated every five years.

Monitoring (Section 8.8.1), assurance (Section 8.8.2) and review (Section 8.8.4) are also used to identify potential new information that may arise during the activity and ensure that performance outcomes and standards are being met and EP environmental control measures are effective. While conducting these activities, qualified, experienced environment advisors, in consultation with experienced Operational and/or Engineering personnel use their professional judgement, to identify

potential new control measures that have potential to improve environmental outcomes or reduce risk. As various monitoring/assurance/review processes are used there is not an overarching procedure/checklist that is suitable to contain a prompt for consideration of new environmental controls.

In addition, Woodside's risk management practices and processes are systematically applied on an ongoing basis to activities provided for within the EP (as summarised within Section 8.2.2). Via these processes and practices, new risk controls for individual planned and unplanned events may be selected and implemented (proportional to risk levels). When such risk controls are identified by environmental advisors as being relevant to the overarching EP sources of risk, these may also be added as new EP control measures. Any new or improved EP environmental controls or specific measures (that have the potential to improve environmental outcomes or reduce risk), can be tracked within the production EP updates register for incorporation into the EP at its next revision. The EP may be internally revised to reflect these changes without resubmission.

Where review processes identify new or improved controls relevant to environmental risks identified in this EP (that have the potential to improve environmental outcomes or reduce risk), the EP may be internally revised to reflect these changes without resubmission.

8.8.4.2 Key Performance Indicator Review

Key performance indicators (KPIs) are developed annually and agreed with senior management (i.e. Macedon Asset Manager). Progress against the environment KPIs is tracked within Asset Scorecards.

9. REVIEWS OF HYDROCARBON SPILL ARRANGEMENTS AND TESTING ARE CARRIED OUT IN ACCORDANCE WITH

Appendix H **.**

9.1.1.1 Learning and Knowledge Sharing

Learning and knowledge sharing occurs via a number of different methods, including for example:

- operations learnings meetings
- event investigations
- event bulletins
- engineering and technical authorities discipline communications and sharing.

9.2 Record Keeping

Compliance records (outlined in MCs in Section 5) are maintained. Record keeping is in accordance with Regulation 22(7) that addresses maintaining records of emissions and discharges such that the records can be used to assess whether EPOs and EPSs are being met (refer to Section 8.8.1 and Table 8-3 for a summary of records that are retained).

9.3 Reporting

9.3.1 Overview

In order to meet the EPOs and EPSs outlined in this EP, Woodside undertakes reporting at a number of levels. These reporting arrangements are outlined below.

9.3.2 Routine Reporting (Internal)

9.3.2.1 Daily Reports

The following daily reports, containing environmental performance information are issued:

- Daily Production Report – The report includes facility performance information on production and a log of any HSE events.
- Subsea support vessel Daily Progress Report(s) – During subsea IMMR activities, daily reports are issued by the Woodside Site Representative. The reports provide performance information on HSE events, diesel use, together with equipment information, current and planned work activities.

9.3.2.2 Performance Reporting

A number of routine performance reports are developed in support of the facility operational activities. These reports cover HSE, production and process safety performance. Information included in these reports, relevant to the EP, includes:

- summary of environmental incidents
- current and planned work activities, significant events (e.g. shutdowns, failures)
- integrity status and process safety metrics
- status of subsea IMMR activities.

9.3.3 Routine Reporting (External)

9.3.3.1 Ongoing Consultation

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's approach to ongoing consultation is that feedback and comments received from relevant persons and additional persons continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation (as set out in Section 5).

Woodside proposes to undertake the engagements with directly impacted relevant persons and additional persons listed in Table 8-4 Relevant new information identified during ongoing consultation will be assessed using the EP Management of Knowledge (refer to Section 8.8.1.1) and Management of Change Process (refer to Section 8.2.3).

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 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.

Woodside has developed a Program of Ongoing Engagement with Traditional Custodians (Appendix G), 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 possible consequences of an activity to be carried out under an Environment Plan on their functions, interests and activities as they relate to cultural values. The program enables Woodside to manage potential impacts and risks to cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians.

Relevant persons, additional persons and those who are merely 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 a measure or control that requires implementation or update to meet the intended outcome of consultation (see Section 5, Woodside will apply its EP Management of Knowledge process (refer to Section 8.8.1.1) and Management of Change process (refer to Section 8.2.3), as appropriate.

The ongoing consultation engagements that Woodside intends to progress for this EP are set out in the table below.

Table 8-4: Ongoing consultation engagements

Report/ Information	Recipient	Purpose	Frequency	Content
Program of Ongoing Engagement with Traditional Custodians (Appendix G)	Relevant cultural authorities	Identification, assessment and consideration of cultural values relevant to the Operational Area or EMBA.	Ongoing.	Assessment of cultural values Any new information on cultural values will be assessed using the EP Management of Knowledge (ref to Section 8.8.1.1) and Management of Change Process (refer to Section 8.2.3).

Emails / Meetings	Relevant cultural authorities	Identification, assessment and consideration of cultural values relevant to the Operational Area and EMBA.	Ongoing.	Assessment of cultural values Any new information on cultural values will be assessed using the EP Management of Knowledge (ref to Section 8.8.1.1) and Management of Change Process (refer to Section 8.2.3).
Notification (email)	AHO	As requested by AMSA during consultation.	At least 24-48 hours before operations commence for activities occurring outside the petroleum Safety Zone >3 weeks.	PS 1.3 (Section 6.6.1) Date of activity start and duration.
Notification (email)	AMSA JRCC	As requested by AMSA during consultation	At least 24-48 hours before operations commence for activities occurring outside the petroleum Safety Zone >3 weeks.	PS 1.4 (Section 6.6.1) Date of activity start and duration.
Notification (email)	All relevant persons to the proposed activity	Notification of significant change	As appropriate	Notification of significant change
Emails/ Meetings	Persons or organisations who provide feedback to Woodside post EP submission.	Identification, assessment and consideration of feedback, claims and/ or objections	As appropriate	Assessment of claims and/ or objections. Any new information on cultural values will be assessed using the EP Management of Knowledge (ref to Section 8.8.1.1) and Management of Change Process (refer to Section 8.2.3).
Notification (email)	Australasian Underwater Cultural Heritage Database Any other stakeholders as required in the Unexpected Finds Procedure (Section8.6).	Report any unexpected finds of potential Underwater Cultural Heritage.	If triggered by Unexpected Finds Procedure (Section8.6).	Refer to Unexpected Finds Procedure (Section8.6).

9.3.3.2 Environmental Performance Review and Reporting

In accordance with applicable environmental legislation for the activity, Woodside is required to report information on environmental performance to the appropriate regulator.

Routine regulatory reporting requirements are summarised in Table 8-5. The requirements include that Woodside will develop and submit an annual Environmental Performance Report to NOPSEMA,

with the first report submitted within 12 months of the commencement of activities covered by this EP (as per the requirements of Regulation 22(7) (i.e. by 30 April the following year).

Table 8-5: Routine external reporting requirements

Report	Recipient	Frequency	Content
Monthly Recordable Incident Report	NOPSEMA	Monthly, by 15 of each month	As required by Regulation 50, details of recordable incidents that have occurred under the EP for the previous month. Refer to Section 9.3.5 for more detail.
Annual EP Performance Report	NOPSEMA	Annual, by 30 June of the year following reporting period	As required by Regulation 22 (2) and 26C the report will report compliance with the EPOs and EPSs outlined in Section 5 of this EP. The reporting period is based in the calendar year 1 January to 31 December.
NPI Report	DCCEEW	Annual, by 30 September each year	Summary of the emissions to land, air and water including those from the facility. Reporting period 1 July to 30 June each year.
National Greenhouse and Energy Reporting (NGERS)	Clean Energy Regulator	Annual, by 31 October each year	Summary of energy use and greenhouse gas emissions including those from the facility. Reporting period is 1 July to 30 June each year.
Cetacean and Whale Shark Sightings Report	DCCEEW (via Australian Antarctic Division)	Annual, by 31 January each year	Summary of cetacean and whale shark sightings. Reporting period is 1 Jan to 31 December.

9.3.3.3 End of the Petroleum Activities Program Notification

In accordance with Regulation 54, Woodside will notify NOPSEMA within ten days of the completion of the Petroleum Activities Program.

9.3.3.4 End of the Environment Plan

The EP will end when Woodside notifies NOPSEMA that the Petroleum Activities Program has ended, all of the obligations identified in this EP have been completed, and NOPSEMA has accepted the notification, in accordance with Regulation 46 of the Environment Regulations.

9.3.4 Incident Reporting (Internal)

All Woodside employees and contractors are required to report environmental incidents and non-conformances with this EP. Incidents are reported using an Event Report Form which includes details of the event, immediate action taken to control the situation, and corrective actions to prevent reoccurrence (for further details refer to Section 8.8.3).

9.3.5 Incident Reporting (External) – Reportable and Recordable

Woodside's regulatory reporting requirements are outlined within the Regulator Event Reporting Procedure supported by the Regulator Event Reporting Guideline.

9.3.5.1 Reportable Incidents

A reportable incident is defined under Regulation 5 of the Environment Regulations as 'an incident relating to the activity that has caused, or has the potential to cause, moderate to significant environmental damage'.

A reportable incident for the Petroleum Activities Program is:

- An incident that has caused environmental damage with a Severity Level of 3 (Moderate) or above (as defined under Woodside PetDW Risk Table; refer to Section 2.6)
- An incident that has the potential to cause environmental damage with a Severity Level of 3 (Moderate) or above (as defined under Woodside's PetDW Risk Table – refer to Section 2.6).

The environmental impact and risk assessment (Section 5) for the Petroleum Activities Program identifies those risks with a potential Severity Level of 3 for environment. The incidents that have the potential to cause this level of impact include hydrocarbon loss of containment events to ocean resulting from either: subsea infrastructure or a vessel collision; or introduction of Invasive Marine Species.

Any such incidents represent potential events that would be reportable incidents. Reporting of incidents is undertaken with consideration of NOPSEMA (2014) guidance stating, 'if in doubt, notify NOPSEMA', and assessed on a case-by-case basis to determine if they trigger a reportable incident as defined in this EP and by the 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:

- orally notify NOPSEMA of all reportable incidents to the regulator as soon as practicable, but within two hours of the incident or of its detection by Woodside
- provide a written record of the reported incident to NOPSEMA, the National Offshore Petroleum Titles Administrator (NOPTA) and the Department of the responsible State Minister (Department of Energy, Mines, Industry Regulation and Safety [DEMIRS]) as soon as practicable after the oral notification of the incident
- complete a written report for all reportable incidents using a format consistent with the NOPSEMA Form FM0929 – Reportable Environment Incident which must be submitted to NOPSEMA as soon as practicable, but within three days of the incident or of its detection by Woodside
- provide a copy of the written report to NOPTA and DEMIRS, within seven days of the written report being provided to NOPSEMA.

9.3.5.2 Recordable Incidents

A recordable incident is defined under Regulation 5 of the Environment Regulations as a 'breach of an EPO or EPS, in the EP that applies to the activity, that is not a reportable incident'.

Any breach of the EPOs or EPSs (as presented within Section 6) will be raised as a recordable incident and managed as per the notification and reporting requirements outlined below and internal requirements outlined in Section 9.3.

Notification

NOPSEMA will be notified of all recordable incidents, according to the requirements of Regulation 50 (4). Woodside will:

- provide a written record not later than 15 days after the end of the calendar month using a format consistent with the NOPSEMA Form – Recordable Environmental Incident Monthly Summary Report (Appendix E).

9.3.5.3 Other External Reporting Requirements and Notifications

In addition to the notification and reporting of environmental incidents defined under the Environment Regulations and Woodside requirements, the following incident reporting requirements also apply in the Operational Area if the spill originates from a vessel:

10. ANY OIL POLLUTION INCIDENTS IN COMMONWEALTH WATERS WILL BE REPORTED (BY THE VESSEL MASTER) TO AMSA RCC AS PER ARTICLE 8 AND PROTOCOL I OF MARPOL WITHIN TWO HOURS VIA THE NATIONAL EMERGENCY 24-HOUR NOTIFICATION CONTACTS, AND A WRITTEN REPORT WITHIN 24-HOURS OF THE REQUEST BY AMSA. (THIS REQUIREMENT IS INCLUDED IN THE MACEDON OIL POLLUTION FIRST STRIKE PLAN;

- Appendix H). If the ship is at sea, reports are to be made to:
    - Free call: 1800 641 792, Phone: 08 9430 2100 (Fremantle).

11. ANY SPILLS GREATER THAN TEN TONNES IN COMMONWEALTH WATERS MUST BE REPORTED (BY THE VESSEL MASTER) TO AMSA WITHIN ONE HOUR. (THIS REQUIREMENT IS DETAILED IN THE MACEDON OIL POLLUTION FIRST STRIKE PLAN;

- Appendix H). Reports are to be made via the national 24-hour emergency notification contacts (AusSAR: RCC):
    - Rescue Coordination Centre Australia (RCC Australia) Phone: 02 6230 6811, Facsimile: 02 6230 6868, Telex: 62349, Free call: 1800 641 792, AFTN: YSARYCYX.
- A hydrocarbon spill incident with potential to significantly impact MNES must be reported to DCCEEW.
- If the activity described within this EP results in the unintentional death of or injury to a fauna that constitute MNES (i.e. species listed as Threatened or Migratory under the EPBC Act), and the activity was not authorised by a permit, the Secretary of the DCCEEW should be notified within seven days of becoming aware of the results of the activity:
    - The Secretary, DCCEEW, Hotline: 1800 803 772, Email: protected.species@environment.gov.au.

12. FOR HYDROCARBON 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 MACEDON OIL POLLUTION FIRST STRIKE PLAN (

Appendix H), including but not limited to:

- A hydrocarbon spill incident with the potential to significantly impact MNES must be reported to DCCEEW.

12.1 Emergency Preparedness and Response

12.1.1 Overview

Under Regulation 22(8), the implementation strategy must contain an 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.

A summary of how this EP and supporting documents address the various requirements of Environment Regulations relating to oil pollution response arrangements is shown in Table 8-6.

Table 8-6: 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), 22(2)	Oil Spill Preparedness and Response Mitigation Assessment (Appendix H Oil Spill Preparedness and Response Strategy Selection and Evaluation)
Describes the OPEP	Regulation 22 (8)	EP: Section 12.1. Woodside's OPEP has the following components: Oil Pollution Emergency Arrangements (Australia) Macedon Oil Pollution First Strike Plan (Appendix I). Oil Spill Preparedness and Response Mitigation Assessment (Appendix H Oil Spill Preparedness and Response Strategy Selection and Evaluation) In accordance with Regulation 56 of the Environmental Regulations the Woodside Oil Pollution Emergency Arrangements (Australia) was provided with the Scarborough Drilling and Completions EP, accepted by NOPSEMA on 1 December 2023
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 H Oil Spill Preparedness and Response Strategy Selection and Evaluation) Macedon Oil Pollution First Strike Plan Appendix I
Details the arrangements for updating and testing the oil pollution response arrangements	Regulation 22 (8)(12),(13)(14)	EP: Section 12.1 Oil Spill Preparedness and Response Mitigation Assessment (Appendix H Oil Spill Preparedness and Response Strategy Selection and Evaluation)
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 H Oil Spill Preparedness and Response Strategy Selection and Evaluation)
Demonstrates that the oil pollution response arrangements are consistent with the national system for oil pollution preparedness and control	Regulation 22(11)	Oil Pollution Emergency Arrangements (Australia).

12.1.2 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 emergency response.

Table 8-7: 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 oil spill 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 oil spill activation, exercise or skills maintenance.
Environment Unit Leader	IMT Fundamentals ICS 100/200 IMO2 or equivalent spill response specialist level with an OSRO Participation in L2 oil spill activation, exercise or skills maintenance
Note on competency/equivalency	
In 2018 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 both CIMT and field-based roles. The revised CIMT Fundamentals training Program and Incident and Crisis Leaders Development Program (ICLDP) align 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).	

12.1.3 Emergency Response Preparation

The CIMT based in Woodside's head office, is the onshore coordination point for an offshore emergency. The CIMT is staffed by an appropriately skilled team available on call 24-hours a day. The purpose of the team is to coordinate incidents, maintain the safety of personnel, minimise damage to the environment and facilities, and to liaise with external agencies. A description of Woodside's Incident Command Structure and arrangements is further detailed in the Woodside Oil Pollution Emergency Arrangements (OPEA)(Australia). Roles and responsibilities for facility emergency response are outlined in the Macedon Facility Safety Case and are consistent with the Macedon ERP and the Pipelines ERP.

Woodside has a number of ERPs in place, which detail the actions and resources available in the event of various emergency scenarios. Electronic copies of the ERPs are available on the facility Virtual Bookshelves and the intranet. Hard controlled copies are available on the facilities.

In addition, the Emergency Preparedness MSPS (M06) is in place to assure that in the event of an incident, the organisation is appropriately prepared for all necessary actions which may be required for the protection of People, Environment, Asset, Reputation and Livelihood.

12.1.3.1 Initial Response to Facility Incident

The facility is equipped with emergency shutdown systems designed to protect personnel, the facility and the environment from unsafe operating conditions and catastrophic situations.

Emergency shutdown systems are provided as a means of isolation in response to process upsets and facility conditions (including associated flowlines and risers) that could result in loss of hydrocarbon inventories, or to reduce the potential impact from a hydrocarbon loss of containment event on the facility. Provision has been made for process and facility alarm systems to provide early indication of any process upset conditions and potential hazardous events, including fire and gas alarms.

The key ERP relevant to the facility and subsea infrastructure (excluding the export pipeline) is the Macedon ERP. This plan covers health, safety, asset and environmental risks (including fire, structural integrity, sabotage, etc.) to ensure the range of occupational, asset and environmental risk exposures from incidents have been considered and plans are in place for their management. The plan provides specific details on the initial response required during events with potential significant environmental consequences such as a hydrocarbon spill, subsea hydrocarbon leak or potential collision.

The Pipelines ERP covers key ERP relevant to the export pipeline, as well as other major pipelines on Woodside's NWS facilities. The Macedon Oil Pollution First Strike Plan provides immediate actions required to commence a response (Appendix I). Vessels have 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 Macedon 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 Activities Program, as detailed in

Appendix H

12.1.4 Hydrocarbon and Other Hazardous Materials Spill

A significant hydrocarbon spill or release during the Petroleum Activities Program is unlikely, but should such an event occur, it has the potential to cause serious environmental and reputational damage if not managed properly. The Woodside OPEA (Australia) document, supported by the Macedon First Strike Plan which provides tactical response guidance to the activity/area (Appendix I), cover spill response for this Petroleum Activities Program.

The Security and Emergency Management Function is responsible for the management of Woodside's hydrocarbon spill response equipment and for the maintenance of hydrocarbon spill preparedness and response documentation. In the event of a major spill, Woodside will request that AMSA (administrator of the National Plan) provides support to Woodside through advice and access to equipment, people and liaison. The interface and responsibilities, as defined under the National Plan, are described in the OPEA (Australia). AMSA and Woodside have a MoU in place to support Woodside in the event of a hydrocarbon spill.

12.1.5 Emergency and Spill Response

Woodside categorises incidents in relation to response requirements as follows:

- **Level 1 Incident** – A Level 1 incident can be resolved through the use of existing resources, equipment and personnel. A Level 1 incident is contained, controlled and resolved by site / regionally based teams using existing resources and functional support services.
- **Level 2 Incident** – A Level 2 incident is characterised by a response that requires external operational support to manage the incident. It is triggered in the event the capabilities of the tactical level response are exceeded. This support is provided to the activity via the activation of all, or part of, the responsible CIMT.
- **Level 3 Incident** – A 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 etc.). The CIMT may also be activated as required to manage the operational incident response requirements.

12.1.6 Emergency and Spill Response Drills and Exercises

Testing of Woodside's capability to respond to incidents will be conducted in alignment with the Emergency and Crisis Management Procedure. The scope, frequency and objective of these tests is described in Table 8-8. Woodside's emergency response testing regime is aligned to existing or developing risks associated with Woodside's operations and activities. Corporate hazards/risks outlined in the corporate risk register, respective Safety Cases or project Risk Registers, are the reference point for emergency management and crisis management exercise schedule development. External participants may be invited to attend exercises, such as government agencies, specialist service providers, oil spill response organisations or industry members with which we have mutual aid arrangements.

The overall objective of exercising is to test procedures, skills and teamwork of the Emergency Response and Command Teams in their ability to respond to major incidents. After each exercise, the team holds a debrief session, during which the exercise is reviewed. Any lessons learnt or areas for improvement are identified and incorporated into revised procedures where appropriate.

Table 8-8: Testing of response capability

Response Category	Scope	Response Testing Frequency	Response Testing Objective
Level 1 Response	Drills are asset specific	Two comprehensive Level 1 'First Strike' drills conducted per year, per asset. Additional Level 1 emergency drills routinely conducted (approximately one per fortnight).	• Comprehensive drill test elements of the Macedon Oil Pollution First Strike Plan for a Level 1 incident (Appendix I). • Emergency drills are scheduled by each asset to test other aspects of their ERP.
Level 2 Response	Exercises are relevant to all Woodside assets	A minimum of one Emergency Management exercise is conducted biennially.	• Testing both the facility IMT response and/or that of the CIMT following handover of incident control.
Level 3 Response		The number of CMT exercises conducted each year is determined by the Chief Executive Officer, in consultation with the VP of Security and Emergency Management.	• Test the ability of the company to respond to and manage a crisis level incident.

12.1.7 Hydrocarbon Spill Response Testing of Arrangements

There are a number of arrangements which, in the event of a spill, will underpin Woodside's ability to implement a response across its petroleum activities. In order to ensure these arrangements are adequately tested, the Capability Development Team within Security and Emergency Management ensures tests are conducted in alignment with the Hydrocarbon Spill Testing of Arrangements Schedule.

Woodside's arrangements for spill response are common across its Australian operating assets and activities to ensure the controls are consistent. The overall objective of testing these arrangements is to ensure that Woodside maintains an ability to respond to a hydrocarbon spill, specifically to:

- Ensure relevant responders, contractors and key personnel understand and practise their assigned roles and responsibilities.
- Test response arrangements and actions to validate response plans.
- Ensure lessons learned are incorporated into Woodside's processes and procedures and improvements are made where required.

If new response arrangements are introduced, or existing arrangements significantly amended, additional testing is undertaken accordingly.

In addition to the testing of response capability described in Table 8-8, up to eight formal exercises are planned annually, across Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

12.1.7.1 Testing of Arrangements Schedule

Woodside's Testing of Arrangements Schedule (Figure 8-3) aligns with international good practice for spill preparedness and response management; the testing is compatible with the IPIECA (2004) Good Practice Guide and the Australian Institute for Disaster Resilience (AIDR) 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.

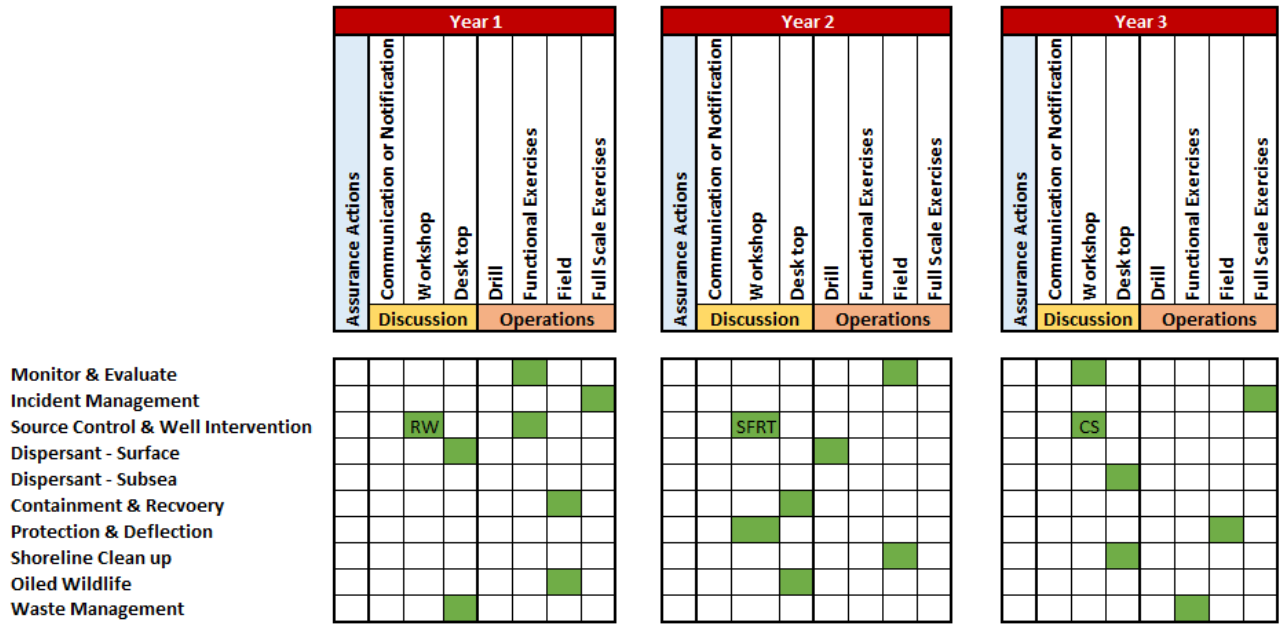

Figure 8-3: Indicative 3-yearly testing of arrangements schedule

The hydrocarbon spill arrangements shown in the rows of the schedule are tested against Woodside's regulatory commitments. Each arrangement has a support agency/company and an area to be tested (e.g., capability, equipment and personnel). For example, an arrangement could be to test Woodside's personnel capability for conducting scientific monitoring, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment.

The vertical columns relate to how hydrocarbon spill arrangements will be tested over the 3-year rolling schedule. The sub-heading for the column describes the standard method of testing likely to be undertaken (e.g., discussion exercise, desktop exercise), and the green cells indicate the arrangements that could be tested for each method.

Some arrangements may be tested across multiple exercises (e.g., critical arrangements) or via other 'additional assurance' methods outside the formal Testing of Arrangements Schedule that also constitute sufficient evidence of testing of arrangements (e.g., audits, no-notice drills, internal exercises, assurance drills).

12.1.8 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.

Subsea support vessels receive regular forecasts from the Bureau of Meteorology (BoM). If a cyclone (or severe weather event) is forecast, the path and its development will be plotted and monitored using the BoM data. If there is the potential for the cyclone (severe weather event) to affect the Petroleum Activities Program, 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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14. LIST OF TERMS AND ACRONYMS

Acronym	Description
@	At
~	Approximately
<	Less/fewer than
>	Greater/more than
≤	Less than or equal to
≥	Greater than or equal to
°C	Degrees Celsius
3D	Three-dimensional
ACN	Australian Company Number
AHO	Australian Hydrographic Office
AIMS	Australian Institute of Marine Science
ALARP	As low as reasonably practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
APPEA	Australian Petroleum Production and Exploration Association
AS/NZS	Australian Standard/New Zealand Standard
AW	Abandoned wells with Wellhead (AW)
BESS	Battery Energy Storage System
BIA	Biologically Important Area
BoM	Bureau of Meteorology
BOP	Blowout Preventer
CCR	Central Control Room
CIMT	Corporate Incident Management Team
cm	Centimetre
cm^3	Cubic centimetre
CMT	Crisis Management Team
CO	Carbon monoxide
CO_2	Carbon dioxide
COO	Chief Operations Officer
cP	Centipoise
CS	Cost Sacrifice
CV	Company Value
DAWE	Department of Agriculture, Water and the Environment
dB re 1 µPa	Decibels relative to one micropascal; the unit used to measure the intensity of an underwater sound
DCCEEW	Department of Climate Change, Energy, the Environment and Water

Acronym	Description
DEMIRS	Western Australian Department of Energy, Mines, Industry Regulation and Safety
DNP	Director of National Parks
DoEE	Commonwealth Department of the Environment and Energy
DoT	Western Australian Department of Transport
DP	Dynamic positioning
eCAR	Environmental Commitments and Actions Register
EDU	Electrical distribution unit
EFL	Electrical flying lead
EMBA	Environment that may be affected
ENVID	Environment Identification (study)
EP	Environment Plan
EP Act	WA *Environmental Protection Act 1986*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPO	Environmental Performance Outcome
EPS	Environment Performance Standard
ERP	Emergency Response Plan
ESD	Ecologically Sustainable Development
ETA	Exploration wells Temporary Abandoned (ETA)
EVP	Executive Vice President
FPSO	Floating production, storage, and offtake
g	Gram
GP	Good Practice
GWA	Goodwyn Alpha
HAZID	Hazard identification (study)
HFL	Hydraulic flying lead
HP	High Pressure
HQ	Hazard Quotient
HSE	Health, Safety, and Environment
HSEC	Health, Safety and Environment Coordinator
HVAC	Heating, ventilation and air conditioning
IMMR	Inspection, monitoring, maintenance and repair
IMS	Invasive Marine Species
IMSMP	Invasive Marine Species Management Plan
IPIECA	International Petroleum Industry Environmental Conservation Association
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature
KEF	Key Ecological Feature

Acronym	Description
kg	Kilogram
kHz	Kilohertz
km	Kilometre
kn	Knot
KPI	Key Performance Indicator
kW	Kilowatt
L	Litre
LAT	Lowest Astronomical Tide
LCS	Legislation, Codes and Standards
LNG	Liquefied Natural Gas
LP	Low Pressure
m	Metre
m/s	Metres per second
m^2	Square metre
m^3	Cubic metre
MAE	Major Accident Event
MARPOL	The International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
MBES	Multibeam Sonar
MC	Measurement Criteria
MEE	Major Environmental Event
MeOH	Methanol
mg	Milligram
ml	Millilitre
MNES	Matters of National Environmental Significance
MoC	Management of Change
MoU	Memorandum of Understanding
MSPS	Management System Performance Standards
MW	Megawatt
n.d.	No date
N/A	Not Applicable
N_2O	Nitrous oxide
NGERS	National Greenhouse and Energy Reporting Scheme
NIMS	Non-indigenous Marine Species
nm	Nautical mile
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator

Acronym	Description
NORM	Naturally Occurring Radioactive Material
NO_X	Oxides of nitrogen
NPI	National Pollutant Inventory
NRA	North Rankin Alpha
NWMR	North-west Marine Region
NWS	North West Shelf
OCIMF	Oil Companies International Marine Forum
OCNS	Offshore Chemical Notification Scheme
OIM	Offshore Installation Manager
OIW	Oil in water
OPEA	Oil Pollution Emergency Arrangements (Australia)
OPEP	Oil Pollution Emergency Plan
OPGGS Act	Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OSPAR	Oslo–Paris Convention for the Protection of the Marine Environment of the North East Atlantic
PAH	Polycyclic aromatic hydrocarbon
pH	Measure of acidity or basicity of a solution
PJ	Professional Judgement
PLONOR	Pose Little or no Risk to the Environment
PMST	Protected Matters Search Tool
ppb	Parts per billion
ppm	Parts per million
PSM	Process Safety Management
PSZ	Petroleum safety zone
PW	Produced Water
RBA	Risk-based Analysis
RBI	Risk-based Inspection
RCC	Rescue Coordination Centre
RO	Reverse osmosis
ROV	Remotely operated vehicle
SCM	Subsea Control Module
SIMAP	Spill Impact Mapping and Analysis program
sm^3	Standard cubic metres
SOPEP	Ship Oil Pollution Emergency Plan
SO_X	Sulfur oxides
SSIV	Sub-sea Isolation Valve
SV	Societal Value

Acronym	Description
T	Tonne
UK	United Kingdom
VOC	Volatile Organic Compound
VP	Vice President
WA	Western Australia
WMS	Woodside Management System
Woodside	Woodside Energy Limited
WOMP	Well Operations Management Plan

15. APPENDIX A WOODSIDE ENVIRONMENT & BIODIVERSITY POLICY

WOODSIDE POLICY

Woodside Energy

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 exploration or development of hydrocarbons within the boundaries of natural sites on the UNESCO World Heritage List (as specified at 1 December 2022). Existing activity may continue if compatible with maintenance of the listed outstanding universal values.
- Not undertaking new exploration or development of hydrocarbons within IUCN Protected Areas (as specified at 1 December 2022) unless compatible with management plans in place for the area. Existing activity may continue if compatible with management plans in place for the area.
- Achieving net zero deforestation[1] associated with new projects that take a Final Investment Decision (FID) after 1 December 2022.
- Developing Biodiversity Action Plans for all new major projects (CAPEX >USD$2 billion) that take a FID after 1 December 2022.
- Supporting positive biodiversity outcomes in regions and areas in which we operate.
- 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.

Approved by the Woodside Energy Group Ltd Board in December 2022.

[1] Definition of Forest: 'trees higher than 5 metres and a canopy cover of more than 10 percent on the land to be cleared'.

DRIMS# 1401783899

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WOODSIDE POLICY

Woodside Energy

Health and Safety Policy

OBJECTIVES

At Woodside we believe that process and personal safety related incidents, and occupational illnesses are preventable. We strive to be an industry leader in health and safety and are committed to managing our activities to minimise adverse health and safety risk related impacts.

PRINCIPLES

Woodside will achieve this by:

- Implementing a systematic approach to health, personal safety, and process safety risk management.
- Maintaining a culture in which everybody is aware of their health and safety obligations and are empowered to speak up and intervene on health and safety issues.
- Identifying current and emerging hazards across the value chain activities to reduce risks to as low as reasonably practicable.
- Embedding health and safety management in our business planning and decision-making processes.
- Integrating health, personal safety and process safety requirements when designing, purchasing, constructing, and modifying equipment and facilities including requiring our contractors to comply with our HSE expectations in a mutually beneficial manner.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Setting targets and publicly reporting on our health and safety performance to help us continually improve.

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 leaders 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 2022

DRIMS# 3475310

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WOODSIDE POLICY

Woodside Energy

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 2022.

DRIMS# 8692011

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16. APPENDIX B RELEVANT REQUIREMENTS

The below table refers to Commonwealth Legislation related to the project.

Commonwealth Legislation	Legislation Summary
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	The Act seeks to "preserve and protect places, areas and objects of particular significance" to Aboriginal people. Under the Section 9 and 10 provisions of the Act, the Minister for the Environment may declare significant Aboriginal areas temporarily or permanently protected if they are considered under threat. Similar declarations regarding Aboriginal objects can be made under Section 12. Under Section 22 of the Act, the contravention of any of these declarations is an offence. Additionally, the discovery of any Aboriginal remains must be reported to the Minister under Section 20. Damage or interference with Aboriginal objects or places is not an offence under the ATSIHP Act except within Victoria under Section 21U.
Air Navigation Act 1920 • *Air Navigation Regulations 1947* • *Air Navigation (Aerodrome Flight Corridors) Regulations 1994* • *Air Navigation (Aircraft Engine Emissions) Regulations 1995* • *Air Navigation (Aircraft Noise) Regulations 1984* • *Air Navigation (Fuel Spillage) Regulations 1999*	This Act relates to the management of air navigation.
Australian Maritime Safety Authority Act 1990	This Act establishes a legal framework for the Australian Maritime Safety Authority (AMSA), which represents the Australian Government and international forums in the development, implementation and enforcement of international standards including those governing ship safety and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters.
Australian Radiation Protection and Nuclear Safety Act 1998	This Act relates to the protection of the health and safety of people, and the protection of the environment from the harmful effects of radiation.
Biosecurity Act 2015 • *Quarantine Regulations 2000* • *Biosecurity Regulation 2016* • *Australian Ballast Water Management Requirements 2017*	This Act provides the Commonwealth with powers to take measures of quarantine, and implement related programs as are necessary, to prevent the introduction of any plant, animal, organism or matter that could contain anything that could threaten Australia's native flora and fauna or natural environment. The Commonwealth's powers include powers of entry, seizure, detention and disposal. This Act includes mandatory controls on the use of seawater as ballast in ships and the declaration of sea vessels voyaging out of and into Commonwealth waters. The Regulations stipulate that all information regarding the voyage of the vessel and the ballast water is declared correctly to the quarantine officers.

Commonwealth Legislation	Legislation Summary
Environment Protection and Biodiversity Conservation Act 1999 • *Environment Protection and Biodiversity Conservation Regulations 2000*	This Act protects matters of national environmental significance (NES). 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 matters of NES must be referred to the Commonwealth Environment Minister.
Environment Protection (Sea Dumping) Act 1981 • *Environment Protection (Sea Dumping) Regulations 1983*	This Act provides for the protection of the environment by regulating dumping matter into the sea, incineration of waste at sea and placement of artificial reefs.
Industrial Chemicals (Notification and Assessment Act) 1989 • *Industrial Chemicals (Notification and Assessment) Regulations 1990*	This Act creates a national register of industrial chemicals. The Act also provides for restrictions on the use of certain chemicals which could have harmful effects on the environment or health.
National Environment Protection Measures (Implementation) Act 1998 • *National Environment Protection Measures (Implementation) Regulations 1999*	This Act and Regulations provide for the implementation of National Environment Protection Measures (NEPMs) to protect, restore and enhance the quality of the environment in Australia and ensure that the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made NEPMs relating to ambient air quality, the movement of controlled waste between states and territories, the national pollutant inventory, and used packaging materials.
National Greenhouse and Energy Reporting Act 2007 • *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*	This Act and associated Rule establishes the legislative framework for the NGER scheme for reporting greenhouse gas emissions and energy consumption and production by corporations in Australia.
Navigation Act 2012 • *Marine order 12 – Construction – subdivision and stability, machinery and electrical installations* • *Marine order 30 - Prevention of collisions* • *Marine order 47 – Offshore Industry units* • *Marine order 57 - Helicopter operations* • *Marine order 91 - Marine pollution prevention—oil* • *Marine order 93 - Marine pollution prevention—noxious liquid substances* • *Marine order 94 - Marine pollution prevention—packaged harmful substances* • *Marine order 96 - Marine pollution prevention—sewage* • *Marine order 97 - Marine pollution prevention—air pollution*	This Act regulates navigation and shipping including Safety of Life at Sea (SOLAS). The Act will apply to some activities of the MODU and project vessels. This Act is the primary legislation that regulates ship and seafarer safety, shipboard aspects of marine environment protection and pollution prevention.

Commonwealth Legislation	Legislation Summary
Offshore Petroleum and Greenhouse Gas Storage Act 2006 • *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* • *Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011* • *Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009*	This Act is the principal Act governing offshore petroleum exploration and production in Commonwealth waters. Specific environmental, resource management and safety obligations are set out in the Regulations listed.
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 • *Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995*	This Act provides for measures to protect ozone in the atmosphere by controlling and ultimately reducing the manufacture, import and export of ozone depleting substances (ODS) and synthetic greenhouse gases, and replacing them with suitable alternatives. The Act will only apply to Woodside if it manufactures, imports or exports ozone depleting substances.
Protection of the Sea (Powers of Intervention) Act 1981	This Act authorises the Commonwealth to take measures for the purpose of protecting the sea from pollution by oil and other noxious substances discharged from ships and provides legal immunity for persons acting under an AMSA direction.
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 *Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994* • *Marine order 91 - Marine pollution prevention—oil* • *Marine order 93 - Marine pollution prevention—noxious liquid substances* • *Marine order 94 - Marine pollution prevention—packaged harmful substances* • *Marine order 95 - Marine pollution prevention—garbage* • *Marine order 96 - Marine pollution prevention—sewage* *Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007* MARPOL Convention	This Act relates to the protection of the sea from pollution by oil and other harmful substances discharged from ships. Under this Act, discharge of oil or other harmful substances from ships into the sea is an offence. There is also a requirement to keep records of the ships dealing with such substances. The Act applies to all Australian ships, regardless of their location. It applies to foreign ships operating between 3 nautical miles (nm) off the coast out to the end of the Australian Exclusive Economic Zone (200 nm). It also applies within the 3 nm of the coast where the State/Northern Territory does not have complementary legislation. All the Marine Orders listed, except for Marine Order 95, are enacted under both the *Navigation Act 2012* and the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This Act is an amendment to the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This amended Act provides the protection of the sea from pollution by oil and other harmful substances discharged from ships.
Protection of the Sea (Harmful Antifouling Systems) Act 2006 • *Marine order 98—(Marine pollution—anti-fouling systems)*	This Act relates to the protection of the sea from the effects of harmful anti-fouling systems. It prohibits the application or reapplication of harmful anti-fouling compounds on Australian ships or foreign ships that are in an Australian shipping facility.
Underwater Cultural Heritage Act 2018 • Underwater Cultural Heritage Guidance for Offshore Developments • Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian Waters.	This Act prescribes penalties for damage to protected underwater cultural heritage without a permit under Section 30 or in contravention of a permit in Section 28. Protected Underwater cultural heritage is prescribed in Section 16 to automatically include the remains and associated artefacts of any vessel or aircraft that has been in Australian waters for 75 years, whether known or unknown. This protection is also extended to underwater cultural heritage in Commonwealth waters specified by the

Commonwealth Legislation	Legislation Summary
	Environment Minister under Section 17. Without a declaration under this section, Aboriginal underwater cultural heritage is not protected under the UCH Act.

17. APPENDIX C EPBC ACT PROTECTED MATTERS SEARCH TOOL REPORTS

PMST Search Results for the Operational Area

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: 17-Jul-2024

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:	40

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:	63
Whales and Other Cetaceans:	27
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	18
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 may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
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	Congregation or aggregation 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat may occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		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 known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may 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	Species or species habitat likely 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
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation 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 known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation 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

Scientific Name	Threatened Category	Presence Text
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		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 likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may 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 Wetlands Species

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[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
[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
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		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 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
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

Scientific Name	Threatened Category	Presence Text
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	Congregation or aggregation 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 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
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat 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

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
Nov - May		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
Enfield full field development	2001/257	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Not controlled action			
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D and 3D seismic surveys	2005/2151	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
CVG 3D Marine Seismic Survey	2012/6654	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
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
Macedon Gas Field Development	2008/4605	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
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
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
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 are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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PMST Search Results for the EMBA

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: 17-Jul-2024

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:	50
Listed Migratory Species:	60

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:	2
Listed Marine Species:	93
Whales and Other Cetaceans:	32
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	6
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:	12
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	104
Key Ecological Features (Marine):	5
Biologically Important Areas:	30
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
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 likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
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 known 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 nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
CRUSTACEAN		
Kumonga exleyi		
Cape Range Remipede [86875]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Milyeringa veritas		
Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
Ophisternon candidum		
Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
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	Translocated population 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
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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 likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Ardenna carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
[Ardenna pacifica](#) Wedge-tailed Shearwater [84292]		Breeding known to occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
[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
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		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		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Migratory Terrestrial Species

Scientific Name	Threatened Category	Presence Text
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat 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

Scientific Name	Threatened Category	Presence Text
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
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 - AIR WEAPONS RANGE [50193]	WA
Unknown	
Commonwealth Land - [52236]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat 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 may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion 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
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]		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
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
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
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

Scientific Name	Threatened Category	Presence Text
Hydrophis peronii as Acalyptophis peronii		
Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii		
Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Indopacetus pacificus Longman's Beaked Whale [72]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat 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)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Nov-Feb		
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
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
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Cape Range	National Park	WA
Cape Range (South)	National Park	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA

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
Gorgon Gas Development	2003/1294		Post-Approval
Action clearly unacceptable			

Title of referral	Reference	Referral Outcome	Assessment Status
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
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
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
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Not controlled action			
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	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
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus	2004/1703	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Island for			
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	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
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
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	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
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	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
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	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 Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778	Not Controlled Action (Particular Manner)	Post-Approval
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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	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
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	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
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	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
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
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
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
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
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west

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]	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 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]	Foraging	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]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
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 are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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18. APPENDIX D DEPARTMENT OF PLANNING, LAND, HERITAGE AND ABORIGINAL ENQUIRY SYSTEM RESULTS

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Directory

Search Criteria

2 Aboriginal Cultural Heritage (ACH) Directory in Shapefile - Consultation_EMBA_Entrained_100ppb, Accumulated_Shoreline_10gm2_pt1, Accumulated_Shoreline_10gm2_pt2

Disclaimer

The *Aboriginal Cultural Heritage Act 2021 (Act)* recognises, protects, conserves, and preserves Aboriginal cultural heritage (ACH), and recognises the fundamental importance of ACH to Aboriginal people and its role in Aboriginal communities past, present and future. The Act recognises the value of ACH to Aboriginal people as well as to the wider Western Australian community.

Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported to the ACH Council or exists on the Directory.

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 email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

Copyright

Terminology

ID: Reported ACH is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH places 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 the location and extent of the ACH boundary is considered reliable.
- **Boundary Restricted = No:** ACH location is shown as accurately as the information submitted allows.
- **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 AboriginalHeritage@dplh.wa.gov.au.
- **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:

- **ACH Directory**: Aboriginal cultural heritage place or cultural landscape.
- **Pending**: Aboriginal cultural heritage place or cultural landscape with information in a verification stage.
- **Historic**: Aboriginal heritage places determined to not meet 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.

ACH Type:

- **Cultural Landscape:** a group of areas interconnected through the tangible elements of Aboriginal culture heritage present.
- **Place**: an area in which tangible elements of Aboriginal cultural heritage are present.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.

Legacy Place Status: A status determined under the previous *Aboriginal Heritage Act 1972*:

- **Registered Site:** the place was assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972.*
- **Lodged:** Information was received in relation to the place, but an assessment was not completed to determine if it met section 5 of the *Aboriginal Heritage Act 1972.*
- **Stored Data/Not a Site:** The place was assessed as not meeting Section 5 of the *Aboriginal Heritage Act 1972.*

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 94 Datum.

Basemap Copyright

Aboriginal Cultural Heritage Inquiry System

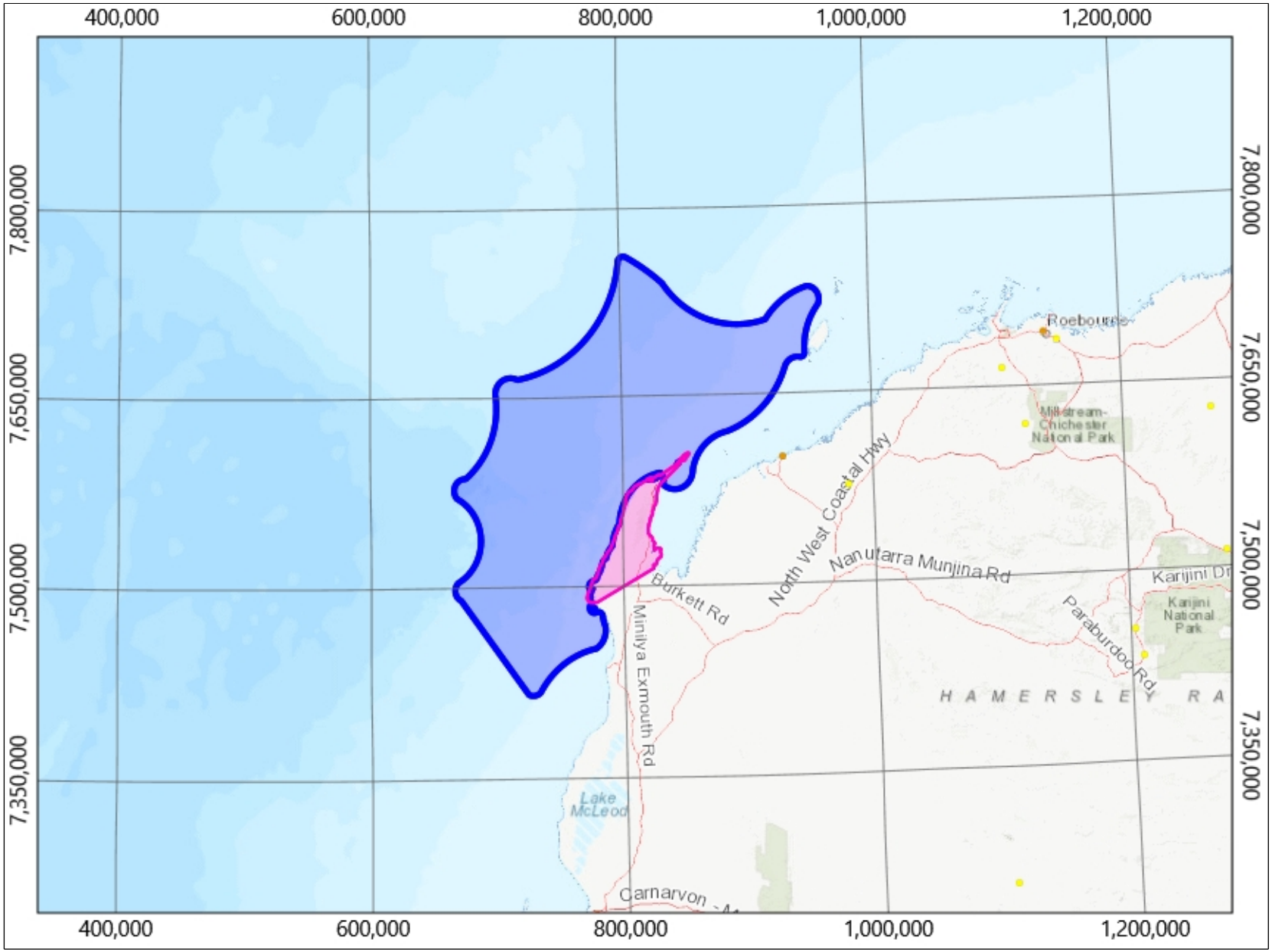
List of Aboriginal Cultural Heritage (ACH) Directory

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	ACH Type	Place Type	Knowledge Holders	Legacy Place Status	Legacy ID
10381	VLAMING HEAD	Yes	No	Yes	No Gender / Initiation Restrictions	ACH Directory	Place	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	Registered Site	P01799
39191	Warnangura (Cape Range) Cultural Precinct	No	Yes	Yes	No Gender / Initiation Restrictions	ACH Directory	Place	Artefacts / Scatter; Ritual / Ceremonial; Creation / Dreaming Narrative; Engraving; Midden; Rock Shelter; Water Source	*Registered Knowledge Holder names available from DPLH	Lodged	

Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Directory



Legend

- Aboriginal Cultural Heritage (ACH) Directory
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

163.13 kilometres

Map Scale 1 : 4,940,000

MGA Zone 49 (GDA94)

19. APPENDIX E NOPSEMA REPORT FORM

NOPSEMA Recordable Environmental Incident monthly Reporting Form
https://www.nopsema.gov.au/assets/Forms/A198750.doc

Report of an accident, dangerous occurrence or environmental incident
https://www.nopsema.gov.au/assets/Forms/N-03000-FM0831-Report-of-an-Accident-Dangerous-Occurrence-or-Environmental-Incident-Rev-8-Jan-2015-MS-Word-2010.docx

20. APPENDIX F CONSULTATION

Appendix F

Macedon Operations Commonwealth Environment Plan

- **Table 1: Assessment of Relevance**
- **Consultation Activities**
- **Table 2: Consultation Report with Relevant Persons or Organisations**
- **Table 3: Engagement Report with Persons or Organisations Assessed as Not Relevant**
- **Record of Consultation**

Date: November 2024

Revision: 2

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APPENDIX F

RELEVANCY ASSESSMENT

Assessment of Relevant Persons for the Proposed Activity

The result of Woodside's assessment of relevant persons in accordance with regulation 25(1) of the Environment Regulations is outlined below at **Table 1** and **Table 2**.

Persons or organisations that Woodside assessed as not relevant but nonetheless chose to contact at its discretion in accordance with **Section 5.3.4** or self-identified and Woodside assessed as not relevant are summarised below at **Table 1** and **Table 3**.

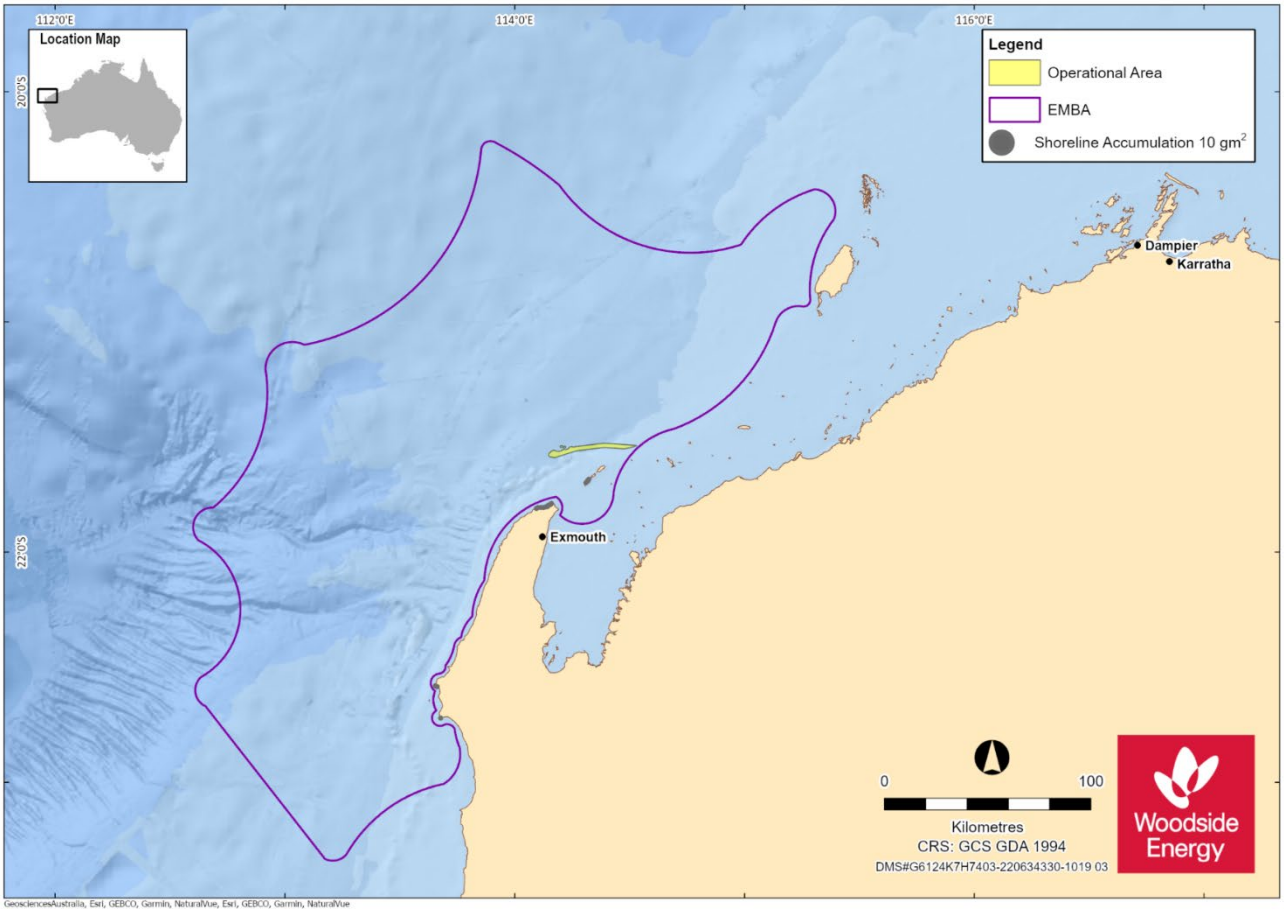

Figure 1: Operational Area and EMBA for this EP.

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 Fisheries Management Authority (AFMA)	Responsible for managing Commonwealth fisheries	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. No Commonwealth fisheries are active in the Operational Area. The Western Deepwater Trawl Fishery and North West Slope and Trawl Fishery are active in the EMBA. AFMA's responsibilities may be relevant to the activity as the Western Deepwater Trawl Fishery and North West Slope and Trawl Fishery are active in the EMBA.	Yes
Australian Hydrographic Office (AHO)	Responsible for maritime safety and Notices to Mariners	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. AHO's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Maritime Safety Authority (AMSA) – Marine Safety	Statutory agency for vessel safety and navigation	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. AMSA – Marine Safety's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
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

Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries	Responsible for implementing Commonwealth policies and programs to support agriculture, fishery, food and forestry industries	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. No Commonwealth fisheries are active in the Operational Area. The Western Deepwater Trawl Fishery and North West Slope and Trawl Fishery are active in the EMBA. DAFF - Fisheries responsibilities may be relevant to the activity as the Western Deepwater Trawl Fishery and North West Slope and Trawl Fishery are active in the EMBA.	Yes
Department of Defence (DoD)	Responsible for defending Australia and its national interests.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. DoD's responsibilities may be relevant to the activity as defence training areas lie within the EMBA.	Yes
Department of Primary Industries and Regional Development (DPIRD)	Responsible for managing State fisheries	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The Mackerel Managed Fishery (Area 2), Marine Aquarium Managed Fishery and Specimen Shell Managed Fishery have been active in the Operational Area within the last 5 years. The Pilbara Trap Fishery, West Coast Deep Sea Crustacean Managed Fishery and Pilbara Line Fishery have been active in close proximity to the Operational Area. The Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Fishery, Mackerel Managed Fishery (Area 2 and 3), Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Fishery, Specimen Shell Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery and Western Australian Sea Cucumber Fishery have been active in the EMBA within the last 5 years. DPIRD's responsibilities may be relevant to the activity as the government department responsible for State fisheries.	Yes
Department of Transport (DoT)	Legislated responsibility for oil pollution response in State waters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has a hydrocarbon spill risk, which may require DoT response in State waters.	Yes
Department of Planning, Lands and Heritage (DPLH)	Responsible for state level land use planning and management, and oversight of Aboriginal cultural heritage	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations.	Yes

	and built heritage matters.	There is known Maritime Cultural Heritage overlapping the EMBA.	
Pilbara Ports Authority	Responsible for the operation of the Port of Dampier.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity does not have the potential to impact Pilbara Ports Authority's responsibilities as the EMBA does not overlap the Pilbara Ports Authority's area of responsibility.	No
Commonwealth and WA State Government Departments or Agencies – Environment			
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)	DAFF administers, implements and enforces the Biosecurity Act 2015. The Department requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health Regulations and that any biosecurity risk is managed. The Department 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.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DAFF – Biosecurity's (formerly DAWE) responsibilities may be relevant to the proposed activities in the EMBA in the prevention of introduced marine species.	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	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DCCEEW's (formerly DAWE) 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

	aircraft and other types of underwater heritage and their associated artefacts in Commonwealth waters.		
Director of National Parks (DNP)	Responsible for the management of Commonwealth parks and conservation zones.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DNP's responsibilities may be relevant to the activity as DNP requires an awareness of activities that occur within 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 and greenhouse gas exploration activities if they occur in, or may impact on the values of marine parks, including where potential spill response activities may occur in the event of a spill (i.e. scientific monitoring).	Yes
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
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 EMBA overlaps WA parks, forests or reserves. Activities have the potential to impact marine tourism in the EMBA.	Yes
Commonwealth and State Government Departments or Agencies – Industry			
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
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) (formerly DMIRS)	Department of relevant State Minister	Required to be consulted under regulation 25(1)(c) of the Environment Regulations.	Yes

Commonwealth Commercial fisheries and representative bodies			
North West Slope and Trawl Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps EMBA and has been active in the EMBA within the last 5 years.	Yes
Southern Bluefin Tuna Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the proposed activity will present a risk to licence holders, given since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (Patterson et al., 2022). In addition, given fishing methods by licence holders for species fished in this 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).	No
Western Deepwater Trawl Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps EMBA and has been active in the EMBA within the last 5 years.	Yes
Western Skipjack Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders, given the fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The Fishery is not currently active and no fishing has occurred since 2009 (Patterson et al., 2022). In addition, interactions are not expected given the species' pelagic distribution fishing methods for species	No

		fished by licence holders.	
Western Tuna and Billfish Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years.	No
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. The Western Deepwater Trawl Fishery and North West Slope and Trawl Fishery are active in the EMBA. CFA's functions may be relevant to the activity as Western Deepwater Trawl Fishery and North West Slope and Trawl Fishery are active in the EMBA.	Yes
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 has provided information to the ASBTIA at its discretion on AFMA advice that it expects all Commonwealth fishers who have entitlements to fish within the proposed area to be consulted, which can be through the relevant fishing industry associations.	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 has provided information to Tuna Australia at its discretion on AFMA advice that it expects all Commonwealth fishers who have entitlements to fish within the proposed area to be consulted, which can be through the	No

		relevant fishing industry associations.	
Pearl Producers Association (PPA)	Peak representative organisation of The Australian South Sea Pearling Industry, with members in Western Australia and the Northern Territory	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Pearl Oyster Managed Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the Pearl Oyster Managed Fishery, the PPA has also been assessed as not relevant.	No
State Commercial fisheries and representative bodies			
Marine Aquarium Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
South West Coast Salmon Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders, given fishers are active south of Perth and from the beach (previous WAFIC advice). Further, no fishing occurs north of the Perth Metropolitan Area and therefore, no effort occurs within the Operational Area or EMBA.	No
Mackerel Managed Fishery (Areas 2 and 3)	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Area 2 of the fishery overlaps the Operational Area and has been active in the Operational Area within the last 5 years. Area 2 and 3 of the fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	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. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders, given the target species is blue swimmer crab generally at less than 50 m water depth.	No
West Coast Deep Sea Crustacean Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area it has been active in the Operational Area within the last 5 years. However, Woodside notes the fishery has been active in close proximity to the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	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 EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
Abalone Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider there to be a potential for interaction with the fishery, given it is a dive and wade fishery with distribution to 5 m depth for Roe's abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).	No
Pearl Oyster Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, the fishery has	No

		not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider there to be a potential for interaction with the fishery, given fishing methods and location for species fished by licence holders (fishing effort is mostly focussed in shallow coastal waters of 10-15 m depth, with a maximum depth of 35 m) (Lulofs et al. 2002).	
Land Hermit Crab Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. Although the fishery overlaps the EMBA, it has not been active in the EMBA within the last 5 years. Woodside does not consider there to be a potential for interaction with the fishery, as this is a land based fishery in Western Australia.	No
Onslow Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes
Western Australian Sea Cucumber Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes
Exmouth Gulf Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes
Gascoyne Demersal Scalefish Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes

West Coast Rock Lobster Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. Although the fishery overlaps the EMBA, it has not been active in the EMBA within the last 5 years. Woodside does not consider there to be a potential for interaction with this fishery as the fishery targets the western rock lobster (panulirus cygnus), colloquially known as crayfish, on Western Australia's coast between Shark Bay and Cape Leeuwin.	No
Demersal Scalefish Fishery: Pilbara Trawl Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years.	No
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. Although the fishery overlaps the Operational Area it has been active in the Operational Area within the last 5 years. However, Woodside notes the fishery has been active in close proximity to the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	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. Although the fishery overlaps the Operational Area it has been active in the Operational Area within the last 5 years. However, Woodside notes the fishery has been active in close proximity to the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	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 (Area 2), Marine Aquarium Managed Fishery and Specimen Shell Managed Fishery have been active in the Operational Area within the last 5 years. The Pilbara Trap Fishery, West Coast Deep Sea Crustacean Managed Fishery and Pilbara Line Fishery have been active in close proximity to the Operational Area. The Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Fishery, Mackerel Managed Fishery (Area 2 and 3), Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Fishery, Specimen Shell Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery and Western Australian Sea Cucumber Fishery have been active in the EMBA within the last 5 years. WAFIC's functions may be relevant to the activity as the peak representative body for State fisheries. Woodside acknowledges WAFIC's consultation guidance1 and has applied this by consulting fisheries that are assessed as having a potential for interaction in the Operational Area directly and consulting fisheries assessed as having a potential for interaction in the EMBA via WAFIC.	Yes
Recreational marine users and representative bodies			
Exmouth Recreational Marine Users	Exmouth-based dive, tourism and charter operators	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Andro Maritime Services Australia, Aquatic Adventure Exmouth, Birds Eye View, Blue Horizon Charters, Blue Lightning Charters, Cape Immersion Tours, Coastal Adventure Tours, Coral Bay Ecotours, Cruise Ningaloo, Dampier Island Tourism, Dive Ningaloo, Evolution Fishing Charters, Exmouth Adventure Co., Exmouth Dive Centre, Exmouth Fly Fishing, Exmouth Game Fishing Club, Indian Chief Charters, Innkeeper Sport Fishing Charter, Kings Ningaloo Reef Tours, Live Ningaloo, Mahi Fishing Charters, Montebello Island Safaris, Ningaloo Aviation, Ningaloo Blue, Ningaloo Coral Bay Boats, Ningaloo Discovery, Ningaloo Ecology Cruises, Ningaloo Fly Fishing, Ningaloo Marine Interaction, Ningaloo Reef Dive, Ningaloo Reef to Range Tours, Ningaloo Safari Tours, Ningaloo Sportfishing Charters, Ningaloo Whaleshark n Dive, Ningaloo Whaleshark Swim, Ocean Eco Adventures, On Strike Charters, Peak Sportfishing Charters, Pelican Charters, Sail Ningaloo,	Yes

		Sea Force Charters, Set the Hook, The Mobile Observatory, Three Islands, Top Gun Charters, Ultimate WaterSports, Venture Ningaloo, View Ningaloo, Warrior Princess Charters, Yardi Creek Boat Tours. Activities have the potential to impact Exmouth-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.	
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. Silverado Charters Pty Ltd, Reel Force Charters Pty Ltd, D & N Nominees Pty Ltd, Lyons Family Super Pty Ltd, Seafresh Holdings Pty Ltd, Eco-Abrolhos Pty Ltd, C Emery Fishing Pty Ltd, On Strike Charters (WA) Pty Ltd, Melkit Pty Ltd, Maritime Engineering Services Pty Ltd, G. C. Bass Nominees Pty Ltd, Brefjen Nominees Pty Ltd, W.A Maritime Investments Pty Ltd, Blue Juice Tours Pty Ltd, Surefire Marine Services Pty Ltd, Makalee Pty Ltd, L & S Family Holdings Pty Ltd, Bondall Pty Ltd, Kw Marine Pty Ltd, Sharkbay Charters Pty Ltd, Bluecity Enterprises Pty Ltd, Jostan Holdings Pty Ltd, Monkey Mia Yacht Charters Pty Ltd, On Strike Charters (Wa) Pty Ltd, Rainfield Pty Ltd, Monster Sportfishing Adventures Pty Ltd, Lulamanzi Investments Pty Ltd, Millennial Charters Pty Ltd, Chapel Nominees Pty Ltd, Regalchoice Holdings Pty Ltd, Fawesome Expeditions Pty Ltd, On Strike Charters (Wa) Pty Ltd, The Great Escape Charter Company Pty Ltd, Aoa International Pty Ltd, Fire Tiger Pty Ltd. Activities have the potential to impact Gascoyne-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
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
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	Yes

		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.	
WA Game Fishing Association	Represents the interests of game fishers in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Activities have the potential to impact game fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Titleholders and Operators			
Chevron Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Western Gas	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Exxon Mobil Australia Resources Company	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Shell Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Carnarvon Energy	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Osaka Gas Gorgon	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes

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 areas overlaps the EMBA.	Yes
JERA Gorgon	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Eni Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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 areas overlaps the EMBA.	Yes
Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
OMV Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
KATO Energy / KATO Corowa	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
INPEX Alpha	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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	Yes

		planned activities in the EMBA.	
Traditional Custodians and nominated representative corporations			
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 overlaps the EMBA, which the Baiyungu, Thalanyji and Yinggarda people are party to. The 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. The NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate Indigenous Land Use Agreement (the ILUA), which overlaps the EMBA. The NTGAC is responsible for the joint management of the inner Ningaloo Marine Park (State Waters), the Cape Range National Park and new conservation areas extending along the Ningaloo Coast, which runs in parallel to the outer Ningaloo Marine Park in Commonwealth waters. The NTGAC's nominated representative is the Yamatji Marlpa Aboriginal Corporation (YMAC) and the NTGAC executive officer and contact officer pursuant to the Corporations (Aboriginal and Torres Strait Islander) Act 2006 is employed by YMAC. Woodside has therefore consulted the NTGAC, via YMAC.	Yes
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Thalanyji native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which BTAC is the Registered Native Title Body Corporate. BTAC is also party to the Macedon ILUA which 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) of the Environment Regulations. The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim overlaps the EMBA, which the Baiyungu, Thalanyji	Yes

		and Yinggarda people are party to. The 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. The Yinggarda Aboriginal Corporations nominated representative is Gumala Aboriginal Corporation.	
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, which is coastally adjacent to the EMBA.	Yes
Robe River Kuruma Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Robe River Kuruma Aboriginal Corporation is party to the KM & YM Indigenous Land Use Agreement 2018 and RTIO Kuruma Marthudunera People ILUA, which are coastally adjacent to the EMBA.	Yes
Native Title Representative Bodies			
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. The NTGAC's nominated representative is YMAC. Woodside has therefore consulted the NTGAC via YMAC. YMAC was also the nominated representative for YAC. Woodside was advised that as of late April 2023, the nominated representative for YAC is now Gumala Aboriginal Corporation. Woodside contacted YMAC to seek guidance with respect to the appropriate Traditional Custodian group(s) to engage with respect to the proposed activity	Yes

		where this was not clear. 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.	
Historical cultural heritage groups or organisations			
Western Australian Museum	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 community representative groups or organisations			
Shire of Exmouth	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Exmouth, Learmonth and North West Cape.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Exmouth's area of responsibility overlaps the EMBA.	Yes
Shire of Ashburton	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Onslow, Pannawonica, Paraburdoo and Tom Price.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Ashburton's area of responsibility overlaps the EMBA.	Yes
Shire of Carnarvon	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Babbage Island, Brockman, Browns Range, Carnarvon, Coral Bay, East Carnarvon, Greys Plain, Ingaarda, Kingsford, Morgantown, North Plantations, South Carnarvon, South Plantations.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Carnarvon's area of responsibility overlaps the EMBA.	Yes
Exmouth Community Liaison Group (CLG)	The Exmouth CLG represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Exmouth region.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Base Marine, Bgahwan Marine, Cape Conservation Group Inc., DBCA, Department of Defence, Department of Transport, Exmouth Bus Charter, Exmouth Chamber of Commerce and Industry, Exmouth District High School,	Yes

		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 Lodge, Offshore Unlimited, Shire of Exmouth, BHP Petroleum, Santos, Community Member The Exmouth CLG's area of responsibility under its terms of reference overlaps the EMBA.	
Onslow Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Onslow and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Onslow Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Carnarvon Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Carnarvon and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Carnarvon Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Other non-government groups or organisations			
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. Woodside has assessed that ACF's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2 of the EP). Woodside chose to contact ACF at its discretion in line with Section 5.3.7 of the EP.	No
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. Woodside has assessed that AMCS's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2 of the EP). Woodside chose to contact AMCS at its discretion in line with Section 5.3.7 of	No

		the EP.	
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. Woodside has assessed that CCWA's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2 of the EP). Woodside chose to contact 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. Woodside has assessed that GAP's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2 of the EP). Woodside chose to contact GAP at its discretion in line with Section 5.3.7 of the EP.	No
350 Australia (350A)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Woodside has assessed that 350A's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2 of the EP). Woodside chose to contact 350A at its discretion in line with Section 5.3.7 of the EP.	No
Sea Shepherd Australia (SSA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Woodside has assessed that SSA's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2 of the EP). Woodside chose to contact SSA at its discretion in line with Section 5.3.7 of the EP.	No

Research institutes and local conservation groups or organisations			
Cape Conservation Group (CCG)	Local conservation group focused on protecting the terrestrial and marine environment of the North West Cape	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. CCG's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps North West Cape.	Yes
Protect Ningaloo	Local conservation group focused on protecting the Exmouth Gulf and Ningaloo Reef and Cape Range	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Protect Ningaloo's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps North West Cape and Ningaloo Reef.	Yes
University of Western Australia (UWA)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by the UWA that intersects within the EMBA. Woodside chose to contact UWA at its discretion in line with Section 5.3.7 of the EP.	No
Western Australian Marine Science Institution (WAMSI)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by WAMSI that intersects within the EMBA. Woodside chose to contact WAMSI at its discretion in line with Section 5.3.7 of the EP.	No
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by CSIRO that intersects within the EMBA. Woodside chose to contact CSIRO at its discretion in line with Section 5.3.7 of the EP.	No

Australian Institute of Marine Science (AIMS)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by AIMS that intersects within the EMBA. Woodside chose to contact AIMS at its discretion in line with Section 5.3.7 of the EP.	No

CONSULTATION ACTIVITIES

Macedon Operations Commonwealth EP Consultation Activities

Woodside has been conducting extensive consultation with relevant persons and other parties for this EP since June 2023 when consultation commenced with interested and affected stakeholders as part of a planned, integrated and consistent approach to stakeholder engagement for Woodside's proposed activities. A broad consultation process has been undertaken with relevant persons for the Macedon Operations Commonwealth EP. Consultation aims to be inclusive, transparent, voluntary, respectful and two-way. Consultation was undertaken by email, letter, phone call or meeting.

- Woodside advertised the planned activities proposed for this EP in national, state and relevant local newspapers including The Australian, The West Australian, Pilbara News, Midwest Times, and North West Telegraph (7 June 2023) (see **Record of Consultation, reference 1.34**). Regional newspapers do not require subscription and are available and in some cases delivered directly to households. All communities within or adjacent to the EMBA had access to this information via this media. No direct comments or feedback were received from the advertisements.
- 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 1.33**).
- Since the commencement of the initial consultation period (June 2023), the Stakeholder Consultation Information Sheet has been available on the Woodside website. The Woodside Consultation Information Sheets include a toll-free 1800 phone number and Woodside's feedback email address (feedback@woodside.com.au).
- Additional targeted information was provided to relevant marine users including AHO and AMSA – Marine Safety (Record of Consultation, reference 1.37). The targeted information included maps and additional information relevant to the specific category of persons. The relevant persons had a 30-day period in which to provide feedback.
- Where appropriate, Woodside conducted phone calls and meetings with relevant persons.
- Where appropriate, targeted follow-up emails were sent to relevant persons who had not provided a response prior to the close of the target feedback period.
- Woodside considered relevant person responses and assessed the merits and relevance of objections and claims about the potential adverse impact of the proposed activity set out in the EP, in accordance with the intended outcome of consultation (see **Section 5.2** of the EP).
- Consultation activities undertaken with relevant persons are summarised at **Table 2**.
- Engagement undertaken with persons or organisations Woodside assessed as not relevant but chose to contact (see **Section 5.3.4** of the EP) or self-identified and Woodside assessed as not relevant are summarised at **Table 3**.
- From May to September 2023, Woodside commenced a geotargeted sponsored social media campaign (**Record of Consultation, reference 2.28**) to various local government authorities within or coastally adjacent to the EMBA for the proposed activities. The campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations on how they can find out about Woodside's proposed activities by visiting Woodside's website.

Platform	Geotargeted Reach	Post Dates	Impact
Facebook	**Regional**: Users 18+ located within 80kms of Carnarvon, Denham, Exmouth, Onslow, Port Hedland, and Karratha	22 August 2023 – 11 September 2023	**Reach**: 240,329 **Frequency**: 3.02 **Impressions**: 726,563 **Clicks**: 1941 **Click Through Rates%**: 0.27%
Instagram	**Regional**: Users 18+ located within 80kms of Carnarvon, Denham, Exmouth, Onslow, Port Hedland, and Karratha	22 August 2023 – 11 September 2023	**Reach**: 114,372 **Frequency**: 2.53 **Impressions**: 288,810 **Clicks**: 257 **Click Through Rates%**: 0.09%

- From June 2023, Woodside held a number of Community information sessions where this EP's Consultation Information Sheets were available and discussed. See tables in **Record of Consultation, reference 2.29, 2.30** and **2.31**.

Date (2023)	Location	Event (if applicable)
17 June	Exmouth	PHI Helicopters Community Open Day
22 June	Roebourne	
28 and 29 June	Karratha	
19 July	Roebourne	
5 and 6 August	Karratha	FeNaCING
18 August	Onslow	Passion of the Pilbara Festival
18, 19 and 20 September	Karratha, Port Hedland and Roebourne	Community Consultation Roadshow
16 and 17 October	Carnarvon and Denham	Community Consultation Roadshow
23 October	Exmouth	Community Consultation Roadshow

Date (2024)	Location	Event (if applicable)
3 and 10 April	Dampier	North West Shelf Visitor Centre
15 June	Dampier	WA Day Festival
25-26 June	Karratha	Pilbara Summit
26 July	Karratha	Community pop up at Lo's Cafe
3-4 August	Karratha	FeNaCING Festival

Traditional Custodian Specific Consultation

In addition to the approaches above including community information sessions, additional activities were undertaken with relevant Traditional Custodians, which were specifically designed to provide for effective engagement with Traditional Custodians and so that information was provided in a form that was readily accessible and appropriate (**Section 5.5**). Consultation undertaken specifically with Traditional Custodians for this Environment Plan includes:

- Direct engagement with nominated representative bodies via the contact listed on the 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:
    - Meetings with directors, elders and any nominated representatives, on country or in Perth
    - Requests and offers of resourcing to enable and support consultation
    - Exchange of written feedback and correspondence
    - Summary Consultation Information Sheet, developed and reviewed by Indigenous representatives in collaboration with technical experts to ensure content is appropriate to the intended recipients, was provided to relevant Traditional Custodian groups (**Record of Consultation, reference 1.32**) and phone calls to provide context to the consultation made.
- Ongoing efforts were made to engage and develop relationships with these bodies via a variety of means such as email, phone calls, alternative contacts, texts, social media and in some cases physical visits.
- Consultation meetings with attendees decided by Traditional Custodian groups, supported by senior Woodside representatives, subject matter experts, First Nations Relations advisers with skills and experience in community engagement. Meetings are developed through a two-way consultation process to ensure effective information sharing via:
    - Mutually agreed agenda avoiding time pressure
    - Encouraging Traditional Custodian attendees to control the pace of the meeting and pause at any time to ask questions, seek clarification or provide feedback
    - Visual aids such as posters, presentations, simplified technical videos and real-world pictures and footage
    - Emphasis on potential planned and unplanned risks and impacts of the activity
    - Ample opportunity for questions and feedback
    - Discussion about ongoing relationship development and opportunities
    - Distribution of hard-copy Consultation Information Sheets (**Record of Consultation, reference 1.33**) and Summary Consultation Information Sheets (**Record of Consultation, reference 1.32**).
    - Meeting all costs such as sitting fees, travel, legal support and executive support and other support required.
- Woodside has a geotargeted sponsored social media campaign (**Record of Consultation, reference 2.28**) to various communities that are coastally adjacent to the EMBA for the proposed activities.
    - The wide-reaching campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations how they can find out about Woodside's proposed activities by visiting Woodside's website, which details the intent of consultation with relevant persons under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)*. The campaign reached around 106,500 people and was viewed close to a million times to date across various regions as shown in **Record of Consultation, reference 2.28**.
    - These social media posts were developed with input from Indigenous representatives. Social media is a highly effective means to engage Indigenous audiences as outlined in Indigenous Digital Life (Professor Carlson, 2021). Advertisements used language and information appropriate to Indigenous audiences. Feedback from community engagements indicates a high level of penetration for this technique.

Woodside has employed a diverse range of techniques to allow relevant persons to become aware

of the proposed activity and how it may affect their functions, activities or interests, and to understand their ability to provide feedback. The combination of PBC engagement meetings, traditional print media, social media and face-to face community interaction was designed with input from Indigenous representatives and adapted to the audience, so that it provides a wide-ranging opportunity to consult.

Table 2: Consultation Report with Relevant Persons or Organisations

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 2 denotes an item raised by a stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that item.

Commonwealth and WA State Government Departments or Agencies – Marine		
Australian Border Force (ABF)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed ABF advising of the proposed activity (Record of Consultation, reference 1.1), provided a Consultation Information Sheet and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.1).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has addressed maritime security-related issues in Section 6.6.1 of this EP based on previous offshore activities. No additional measures or controls are required.
Outcomes of Consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with ABF 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to Australian Border Force on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • Woodside has sent a follow up email seeking feedback on the proposed activities. • Woodside has provided the Australian Border Force with the opportunity to provide feedback over a 16-month period.		
Australian Fisheries Management Authority (AFMA)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed AFMA advising of the proposed activity (Record of Consultation, reference 1.6), provided a Consultation Information Sheet and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.		

- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.5).
- **(1)** On 18 July 2023, AFMA replied advising it had no specific comment on the activities but asked if not already done so, encouraged Woodside to engage directly with operators in the relevant fisheries (SI Report, reference 12.1).
- **(1)** On 18 July 2023, Woodside responded and confirmed it had provided information to the relevant fishery licence holders (SI Report, reference 12.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) AFMA has requested Woodside consult with operators who have entitlements to fish within the proposed area.	**(1)** **Woodside assessment:** Woodside has consulted operators with entitlement to fish within the proposed area. **Woodside response:** Woodside confirmed it had consulted operators who had entitlements to fish within the proposed area.	**(1)** Woodside has assessed the relevancy of Commonwealth fisheries issues in Section 4.9.2 of this EP.
Whilst feedback has been received, there were no objections or claims.	Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, and individual relevant licence holders. 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 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address AFMA's functions, interests or activities. No additional controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation regulation 25 of the Environment Regulations and consultation with AFMA 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Australian Fisheries Management Authority on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- Woodside has addressed and responded to the Australian Fisheries Management Authority over a 16-month period.

Australian Hydrographic Office (AHO)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed AHO advising of the proposed activity (Record of Consultation, reference 1.4), provided a Consultation Information Sheet and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- **(1)** On 29 June 2023, AHO emailed Woodside acknowledging the proposed activity and advised the data supplied will now be registered, assessed, prioritised and validated in preparation for updating AHO's Navigational Charting products (SI Report, reference 1.1).

- On 19 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.25).
- **(1)** On 20 July 2023, AHO emailed Woodside acknowledging the proposed activity and advised the data supplied will now be registered, assessed, prioritised and validated in preparation for updating AHO's Navigational Charting products (SI Report, reference 1.2).
- (1) On 1 August 2023, Woodside responded and thanked AHO for its feedback (SI Report, reference 1.3) and advised that in accordance with feedback provided by AMSA for this EP, Woodside confirms it will:
    - Notify the AHO no less than 4 weeks before operations commence in order to promulgate a Notice to Mariners.
    - Provide an update to the AHO on any material changes to planned activities.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) AHO has acknowledged receipt of Woodside's consultation emails.	**(1)** **Woodside assessment:** Woodside noted AHO had received its consultation information. **Woodside response:** Woodside thanked AHO for its feedback and confirmed it would notify the AHO no less than 4 weeks before operations commence and provide an update to AHO on material changes.	**(1)** Woodside will notify the AHO no less than four working weeks before operations commence, as referenced as PS 1.3 in this EP.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address AHO's functions, interests or activities. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with AHO 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Consultation Information provided to AHO on 28 June 2023 based on their functions, interests or activities.
- Woodside has addressed and responded to the AHO over a 16-month period.

Australian Maritime Safety Authority (AMSA) - Marine Safety

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed AMSA advising of the proposed activity (Record of Consultation, reference 1.4) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.3).

- On 13 July 2023, AMSA emailed Woodside (SI Report, reference 2.1) and:
  - **(1)** requested that AMSA's Joint Rescue Coordination Centre (JRCC) be notified at least 24–48 hours before operations commence;
  - **(2)** requested that the AHO be contacted no less than four working weeks before operations commence for the promulgation of related notices to mariners;
  - **(3)** requested that all vessels exhibit appropriate lights and shapes to reflect the nature of operations; and
  - **(4)** requested that all vessels comply with the International Rule for Preventing Collisions at Sea.
- On 19 July 2023, Woodside responded thanking AMSA for its feedback (SI Report, reference 2.2) and confirmed Woodside will:
  - (2) notify the AHO no less than 4 weeks before operations commence;
  - (1) notify AMSA's JRCC at least 24-48 hours before operations commence;
  - (1) notify AMSA's JRCC when operations end;
  - (2) provide updates to both the AHO and AMSA on any material changes to planned activities.
  - (3) confirmed vessels would exhibit appropriate lights and shapes to reflect the nature of operations and the obligation to comply with the International rules for Preventing Collisions at Sea.
- On 31 July 2023, Woodside emailed AMSA to propose the following notification protocols given the ongoing nature of activities during the life of the EP (SI Report, reference 2.3). Woodside:
  - (1) will notify AMSA JRCC where vessel activities are undertaken for more than three weeks at a time in the Operational Area (but outside the Petroleum Safety Zone), as defined in the Operations Environment Plans. Notification at least 24-48 hours before activity commencement.
  - (2) will notify AHO with details relevant to the operations, to enable them to generate a temporary Maritime Safety Information Notifications (MSIN) and temporary Notice to Mariners (NTM) for activities where vessel activities are to be undertaken for more than three weeks at a time in the Operational Area (but outside the Petroleum Safety Zone), as defined in the Operations Environment Plans. Notification no less than four weeks before operations.
  - (4) advised it did not propose to implement further anti-collision measures at this time but collision risk mitigation measures were constantly being evaluated and implemented for activities as required.
  - Woodside seeks AMSA's confirmation that these protocols are acceptable to AMSA for its planned activities under the revised Operations EP.
- **(1, 2, 4)** On 1 August 2023, AMSA emailed Woodside and advised it can confirm these protocols are acceptable to AMSA for Woodside's planned activities under the revised Operations Environment Plans (SI Report, reference 2.4).

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) AMSA's Joint Rescue Coordination Centre (JRCC) be notified at least 24–48 hours before operations commence and when operations end.	**(1)** **Woodside assessment:** Woodside commits to notifying AMSA's JRCC at least 24-48 hours before operations commence, and when operations end. **Woodside response:** Woodside confirmed it would notify AMSA's JRCC where vessel activities were undertaken for more than three weeks at a time in the Operational Area.	**(1)** Woodside will notify AMSA's JRCC at least 24–48 hours before activities commence for each survey, as referenced as PS 1.4 in this EP.
(2) The AHO be contacted no less than four working weeks before operations	**(2)** **Woodside assessment:** Woodside commits to notifying AHO no less than four	**(2)** Woodside will notify the AHO no less than four working weeks before operations

commence for the promulgation of related notices to mariners, and AHO and AMSA be updated on any material changes to planned activities.	weeks before operations commence. **Woodside response:** Woodside confirmed it would notify AHO with details relevant to the operations, to enable them to generate a temporary Maritime Safety Information Notifications (MSIN) and temporary Notice to Mariners (NTM) for activities to be undertaken for more than three weeks at a time in the Operational Area. Woodside also confirmed it would provide updates to the AHO and AMSA on any material changes to planned activities.	commence (where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks), as referenced as a PS 1.3 in this EP.
(3) All vessels exhibit appropriate lights and shapes to reflect the nature of operations.	**(3)** **Woodside assessment:** Woodside vessels will exhibit appropriate lights and shapes. **Woodside response:** Woodside confirmed vessels would exhibit appropriate lights and shapes to reflect the nature of operations.	**(3)** The EP contains a number of other controls that address AMSA's feedback on lighting and compliance with the international rule for preventing collisions at sea, specifically safety zones are established (temporarily around the MODU and permanently around the facility), vessels are required to comply with marine orders and the facility's collision prevention system will be implemented.
(4) All vessels comply with the International Rule for Preventing Collisions at Sea.	**(4)** **Woodside assessment:** Woodside complies with the International Rules for Preventing Collisions at Sea and is continuously evaluating existing collision risk mitigation measures. **Woodside response:** Woodside advised it did not propose to implement further anti-collision measures for the activity at this time but collision risk mitigation measures were constantly being evaluated and implemented.	**(4)** The EP contains a number of other controls that address AMSA's feedback on lighting and compliance with the international rule for preventing collisions at sea, specifically safety zones are established (temporarily around the MODU and permanently around the facility), vessels are required to comply with marine orders and the facility's collision prevention system will be implemented.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address AMSA – Marine Safety's functions, interests or activities.
Outcomes of Consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with AMSA 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023.		

- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to AMSA – Marine Safety on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to AMSA – Marine Safety over a 16-month period.

Australian Maritime Safety Authority (AMSA) – Marine Pollution

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed AMSA advising of the proposed activity (Record of Consultation, reference 1.5), provided a Consultation Information Sheet and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.4).
- On 18 July 2023, AMSA – Marine Pollution replied with standard response that the email would be actioned as soon as possible by relevant officer (SI Report, reference 3.1).
- On 17 October 2023, Woodside emailed DoT and provided the five-year revision of the Oil Pollution First Strike Plan (Appendix H) – the Woodside Macedon Operations (Commonwealth Waters) – Oil Pollution First Strike Plan (SI Report, 3.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
AMSA – Marine Pollution has acknowledged receipt of Woodside's consultation emails. No feedback, objections or claims received despite follow up.	Woodside has provided AMSA – Marine Pollution with a copy of the Oil Pollution First Strike Plan Woodside and has addressed oil pollution planning and response at Appendix D. 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 7.2.3.1 of the EP).	Woodside has addressed oil pollution planning and response in Appendix D. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with AMSA – Marine Pollution 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to AMSA – Marine Pollution on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to AMSA – Marine Pollution over a 16-month period.

Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries and Biosecurity (marine pests, vessels, aircraft and personnel) *(formerly DAWE)*

Summary of information provided and record of consultation:

• On 28 June 2023, Woodside emailed DAFF advising of the proposed activity (Record of Consultation, reference 1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 19 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.11).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside has consulted AFMA, DAFF - Fisheries, CFA and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	The EP demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (Section 4.8). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7. The EP demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (Section 4.9.1). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7. Vessels are required to comply with the Australian Biosecurity Act 2015, specifically the Australian Ballast Water Management Requirements (as defined under the Biosecurity Act 2015) (aligned with the International Convention for the

		Control and Management of Ships' Ballast Water and Sediments) to prevent introducing IMS. Vessels will be assessed and managed to prevent the introduction of invasive marine species in accordance with Woodside's Invasive Marine Species Management Plan (see Section 6.7.9). Woodside has assessed the relevancy of Commonwealth fisheries issues in Section 4.9.2 of this EP. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DAFF 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Consultation Information provided to Department of Agriculture, Fisheries and Forestry – Fisheries and Biosecurity on 28 June 2023 based on their functions, interests or activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Department of Agriculture, Fisheries and Forestry with the opportunity to provide feedback over a 16-month period.

Department of Defence (DoD)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed DoD advising of the proposed activity (Record of Consultation, reference 1.14) and provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 19 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.12).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside will notify the AHO no less than four working weeks before operations commence, as referenced as PS 1.4 in this EP. Notifying the AHO provides DoD with information of the PAP through maritime

		safety information. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DoD 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DoD on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the DoD with the opportunity to provide feedback over a 16-month period.

Department of Primary Industries and Regional Development (DPIRD)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed DPIRD advising of the proposed activity (Record of Consultation, reference 1.2), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- **(1)** On 29 June 2023, DPIRD emailed Woodside noting the relevant work is primarily routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities and DPIRD noted that it assumed Woodside will include consultation and input from relevant state commercial and recreational fishery licence holders (SI Report, reference 4.1).
- **(1)** On 19 July 2023, Woodside emailed thanking DPIRD for the email and confirmed it has consulted relevant state commercial fishery licence holders and recreational fishery licence holders (SI Report, reference 4.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) DPIRD has provided feedback noting that the relevant work is primarily routine production and operations, and IMMR activities. DPIRD requested that the fisheries that may potentially be impacted be consulted.	**(1)** **Woodside assessment:** Woodside has consulted relevant fishery stakeholders for this activity. **Woodside response:** Woodside confirmed with DPIRD it has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the Operational Area for the proposed activity.	**(1)** Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP.
Whilst feedback has been received, there were no objections or claims.	Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP.	Woodside considers the measures and controls in the EP address DPIRD's functions, interests or activities.

	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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DPIRD 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DPIRD on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to DPIRD over a 16-month period.

Department of Transport (DoT)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed DoT advising of the proposed activity (Record of Consultation, reference 1.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.1).
- On 17 October 2023, Woodside emailed DoT and provided the five-year revision of the Oil Pollution First Strike Plan (FSP) (Appendix H) – the Woodside Macedon Operations (Commonwealth Waters) – Oil Pollution FSP. Woodside noted for DoT's reference, that DoT was previously provided the Macedon Operations (State Waters) Oil Pollution FSP for comment, responding to the review on 13 July 2023 (SI Report, reference 5.1).
- **(1)** On 14 November 2023, DoT emailed Woodside (SI Report, reference 5.2) asking for clarifications on the Oil Pollution FSP:
    - The difference between the EMBA in the stakeholder consultation information sheet and in the Oil Pollution FSP.
    - The modelling used for oil spill trajectory.
    - The receptors impacted beyond 48 hours of a spill.
    - The alignment with DoT's Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020) (IGN).
    - Feedback timeframe.
- **(1)** On 29 November 2023, Woodside provided a detailed response to all the queries raised by DoT including (SI Report, reference 5.3):
    - Advising that Woodside has aligned the roles in Appendix F of the Oil Pollution FSP to the DoT Industry Guidance Note requirements as per the request in DoT's email of 14 November 2023.
    - updated the IMT figure in Appendix E of the Oil Pollution FSP.
- **(2)** On 22 December 2023, DoT emailed Woodside to confirm preference in receiving worst-case EMBA related to specific activities (SI report, reference 5.4).
- **(2)** On 22 December 2023, Woodside emailed DoT confirming future submissions will provide EMBAs that are per-activity (SI Report, reference 5.5).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) DoT asked for clarification on Woodside's Oil Pollution FSP.	**(1)** **Woodside assessment:** Woodside noted that DoT required clarification on its Oil Pollution FSP. **Woodside response:** Woodside addressed DoT's feedback, including clarifying its Oil Pollution FSP.	**(1)** Woodside will provide DoT with a copy of the accepted Oil Pollution First Strike Plan, as referenced in the OSPRMA (Appendix H).
(2) Requested to receive worst-case EMBA related to specific activities.	**(2)** **Woodside assessment:** Woodside agrees to provide EMBAs that are per-activity for future submissions. **Woodside response:** Woodside confirmed it would submit EMBAs related to specific activities.	**(2)** Not required.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address DoT's functions, interests or activities. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DoT 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DoT on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to DoT over a 16-month period.

Department of Planning, Lands and Heritage (DPLH)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed DPLH advising of the proposed activity (Record of Consultation, reference 1.17), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.15).
- **(1)** On 14 July 2023, DPLH emailed Woodside thanking it for the opportunity to provide feedback on the proposed activities and confirmed it did not have any feedback, subject to consultation with the relevant stakeholders (SI Report, reference 7.1).
- **(1)** On 19 July 2023, Woodside emailed DPLH to thank it for its feedback and for confirming it has no comment on the proposed activities (SI Report, reference 7.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) DPLH confirmed it doesn't have any feedback on the proposed activities.	**(1)** **Woodside assessment**: Woodside notes DPLH's confirmation that it doesn't have any feedback on the proposed activities. **Woodside response:** Woodside thanked DLPH for its feedback and noted it had no comment on the proposed activity.	**(1)** Not required.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 7.2.3.1 of the EP).	The Environment Plan demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (Section 4.9.1). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7. Woodside considers the measures and controls in the EP address DPLH's functions, interests or activities. No additional measures or controls are required.
Outcomes of Consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DPLH 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to DPLH on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has addressed and responded to DPLH over a 16-month period.		

Commonwealth and WA State Government Departments or Agencies – Environment		
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel) *(formerly DAWE)*		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed DAFF advising of the proposed activity (Record of Consultation, reference 1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 19 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.11).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside has consulted AFMA, DAFF - Fisheries, CFA and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	The EP demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (Section 4.8). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7. The EP demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (Section 4.9.1). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.6.

		Vessels are required to comply with the Australian Biosecurity Act 2015, specifically the Australian Ballast Water Management Requirements (as defined under the Biosecurity Act 2015) (aligned with the International Convention for the Control and Management of Ships' Ballast Water and Sediments) to prevent introducing IMS. Vessels will be assessed and managed to prevent the introduction of invasive marine species in accordance with Woodside's Invasive Marine Species Management Plan (see Section 6.6.3). Woodside has assessed the relevancy of Commonwealth fisheries issues in Section 4.9.2 of this EP. Woodside consulted relevant persons as per requirements of Environment Regulations to ensure they are aware of activities in the Operational Area, as referenced as PS 1.3 in this EP. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DAFF 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DAFF - Biosecurity on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided DAFF - Biosecurity with the opportunity to provide feedback over a 16-month period.

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

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed DCCEEW advising of the proposed activity (Record of Consultation, reference 1.15), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.

- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.13).
- **(1)** On 19 July 2023, DCCEEW emailed Woodside and advised that the approach to risk mitigation and compliance with the UCH Act requirements described aligns with the advice provided to proponents (SI Report, reference 15.1). DCCEEW asked that Woodside continue to consult with its team as needed on these activities.
- **(1)** On 3 August 2023, Woodside replied that it would apply the methodology described and confirmed that Woodside will keep DCCEEW's UCH team informed of future developments related to the EP (SI Report, reference 15.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) DCCEEW advised that the approach to risk mitigation and compliance with the UCH Act requirements aligned with their advice and asked to continue to be consulted as needed on these activities.	**(1)** **Woodside assessment:** Woodside will apply the methodology described and will keep DCCEEW's UCH team informed of future developments related to the EP. **Woodside response:** Woodside confirmed it would apply the methodology described and keep DCCEEW informed of future developments.	**(1)** The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (Section 4.8). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill as demonstrated in Section 6.7.
Whilst feedback has been received, there were no objections or claims.	Woodside has consulted AFMA, DAFF - Fisheries, CFA and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 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 of invasive marine species in accordance with Woodside's Invasive Marine Species Management Plan (see Section 6.7.9). Woodside has assessed the relevancy of Commonwealth fisheries issues in Section 4.9.2 of this EP.

		No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DCCEEW 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DCCEEW on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to DCCEEW over a 16-month period.

Director of National Parks (DNP)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed DNP advising of the proposed activity (Record of Consultation, reference 1.16), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.14).
- On 7 December 2023, DNP emailed Woodside (SI Report, reference 14.1) advising:
  - **(1)** DNP noted as the planned activities do not overlap any AMPs, there are no authorisation requirements from the DNP.
  - **(2)** Woodside should consider the AMPs and their representativeness and ensure the EP for the proposed activity:
    - Identifies and manages all impacts and risks on AMP values to an acceptable level and considers all options to avoid or reduce them to ALARP.
    - Clearly demonstrates that the activity will not be inconsistent with the management plan.
    - DNP referred Woodside to the North-west Marine Parks Network Management Plan 2018 and the Australian Marine Parks Science Atlas.
    - Woodside's EP should identify offshore petroleum activities to ensure risks to AMPs are assessed and effective migration applied to mitigate breaches to the EPBC Act,
  - **(3)** DNP advised it did not require further notification of progress regarding this activity unless details regarding the activity changed and resulted in an overlap with or new impact to a marine park, or for emergency responses.
  - **(4)** Woodside should make DNP aware of any oil/gas pollution incidences which occur within a marine park or are likely to impact on a marine park as soon as possible.
- On 8 December 2023, Woodside thanked DNP for its response (SI Report, reference 14.2) and advised:
  - **(1)** Woodside noted DNP's confirmation that:
    - Planned activities do not overlap any Australian Marine Parks (AMPs),
    - There are no authorisation requirements from the DNP at this time.
  - **(2)** Woodside had taken into consideration the DNP and NOPSEMA's 'Petroleum Activities and Australian Marine Parks' guidance note while preparing this EP to ensure 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 activity will not be inconsistent with the North-west Marine Parks Network Management Plan 2018.

– **(3, 4)** Woodside would notify DNP in relation to the activity if details regarding the activity changed and resulted in an overlap with, or new impact to, a marine park, or for emergency responses.

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) Planned activities did not overlap any AMPs, therefore there were no authorisation requirements, and no claims and objections at this time,	**(1)** **Woodside assessment:** Woodside noted there were no objections or authorisation requirements from DNP. **Woodside response:** Woodside noted DNP had no objections or claims at this time and that planned activities did not overlap any AMPs, nor were there any authorisation requirements.	**(1)** Not required.
(2) Identify and manage impacts and risks on AMP values and demonstrate the activity will not be inconsistent with the management plan.	**(2)** **Woodside assessment:** Woodside has taken into consideration the Petroleum Activities and Australian Marine Parks guidance note while preparing the EP. **Woodside response:** Woodside confirmed it had taken into consideration the 'Petroleum Activities and Marine Parks' guidance note to ensure the EP identified and managed all risks on AMP values, and clearly demonstrated that activities will not be inconsistent with the management plan.	**(2)** Woodside has assessed the environmental risks of planned activities in Section 6 of this EP.
(3) Advised it did not require further notification unless details regarding the activity change resulting in an overlap or new impact to a marine park, or for emergency responses.	**(3)** **Woodside assessment:** Woodside will contact DNP if details change or for emergency response. **Woodside response:** Woodside confirmed it would contact the DNP if details regarding the activity change and result in an overlap with or new impact to a marine park, or for an emergency response, as per the commitment in the Oil Pollution First Strike Plan (Appendix H).	**(3)** Woodside's Oil Pollution First Strike Plan for this EP will incorporate notifications to DNP (See Appendix H of this EP).
(4) Advised that it should be made aware of oil/gas pollution incidences which occur within a marine park or are likely to impact on a marine park as soon as possible.	**(4)** **Woodside assessment:** Woodside will contact DNP if an incidence occurs within a marine park or is likely to impact a marine park. **Woodside response:** Woodside confirmed it would contact the DNP if there was a potential new impact to a marine park, or for an emergency response, as per the commitment in the Oil Pollution First Strike Plan (Appendix H).	**(4)** Woodside has assessed the environmental risks of planned activities in Section 6 of this EP.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will	No additional measures or controls are required.

	be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DNP 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DNP on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided DNP with the opportunity to provide feedback over a 16-month period.

Department of Biodiversity, Conservation and Attractions (DBCA)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed DBCA advising of the proposed activity (Record of Consultation, reference 1.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.1).
- On 27 July 2023, DBCA sent an email thanking Woodside for providing information in relation to its proposed revision of its Macedon Operations Commonwealth and State EPs (SI Report, reference 6.1). The DBCA noted:
  - **(1)** The Macedon Operations are located in vicinity of reserves managed by DBCA under the CALM act and given the ecological importance of areas potentially affected by a hydrocarbon release from the proposed activities, it is considered important that the baseline values and state of the potentially affected environment are appropriately understood and documented prior to operations commencing.
  - **(2)** In the event of a hydrocarbon release, it is requested that Woodside notify DBCA's Pilbara regional office as soon as practicable on (08) 9182 2000.
- On 2 August 2023, Woodside replied thanking DBCA for its response (SI Report, reference 6.2). Woodside:
  - **(1)** Informed DBCA Woodside maintains knowledge and an understanding of areas of ecological importance within and adjacent to operational areas.
  - **(2)** Advised its oil spill scientific monitoring program will provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release and the First Strike Plan included the DBCA Pilbara telephone number.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Documentation of areas potentially affected by any operations commencing that have the potential to lead to hydrocarbon releases, establishment of appropriate	**(1)** **Woodside assessment:** Woodside maintains knowledge of ecologically important areas and assesses the existing environment that may be affected in the EP.	**(1)** The EP demonstrates that the proposed activities are outside the boundaries of a proclaimed State Marine Park and identifies that there are no credible impacts

baseline survey data on the current state of areas, and implementation of a Before-After, Control-Impact (BACI) framework.	**Woodside response:** Woodside advised areas of ecological importance in the proximity of the Environment Plan Operational Areas will not be impacted by planned activities.	to the values of any State Marine Parks as a result of planned activities (Section 4.8). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7.
(2) Provided an 'Incidents and Emergency Response' in case of a hydrocarbon release and incorporated DBCA's Pilbara number in its First Strike Plan.	**(2)** **Woodside assessment:** Woodside adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill. Woodside has included the DBCA Pilbara number in its First Strike Plan. **Woodside response:** Woodside advised its oil spill scientific monitoring program (SMP) would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release, or any release event with the potential to contact sensitive areas. Woodside has also incorporated the DBCA Pilbara phone number in its First Strike Plan.	**(2)** The EP demonstrates that the proposed activities are outside the boundaries of a proclaimed State Marine Park and identifies that there are no credible impacts to the values of any State Marine Parks as a result of planned activities (Section 4.8). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address DBCA's functions, interests or activities. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DBCA 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DBCA on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to DBCA over a 16-month period.

Commonwealth and State Government Departments or Agencies – Industry		
Department of Industry, Science and Resources (DISR)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed DISR advising of the proposed activity (Record of Consultation, reference 1.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.1).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DISR 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to DISR on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up email seeking feedback on the proposed activities. • Woodside has provided DISR with the opportunity to provide feedback over a 16-month period.		
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) *(formerly DMIRS)*		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed DEMIRS advising of the proposed activity (Record of Consultation, reference 1.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.1).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, 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,	No additional measures or controls are required.

	where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with DEMIRS 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to DEMIRS on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided DEMIRS with the opportunity to provide feedback over a 16-month period.

Commonwealth Commercial fisheries and representative bodies

Commonwealth Fisheries Association (CFA)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed CFA advising of the proposed activity (Record of Consultation, reference 1.9), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.26).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has consulted AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia and individual relevant licence holders. 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 7.2.3.1 of the EP).	Woodside has assessed the relevancy of Commonwealth fisheries issues in Section 4.9.2 of this EP. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on CFA's functions, interests or activities. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with CFA 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to CFA on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided CFA with the opportunity to provide feedback over a 16-month period.

State Commercial fisheries and representative bodies

Marine Aquarium Managed Fishery

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent a letter to Marine Aquarium individual licence holders advising of the proposed activity (Record of Consultation, reference 1.10), provided a Consultation Information Sheet, and referred to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.8).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Marine Aquarium Managed Fishery 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Marine Aquarium Managed Fishery on 28 June 2023 based on their functions, interests or activities.
- Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided Marine Aquarium Managed Fishery with the opportunity to provide feedback over a 16-month period.

Mackerel Managed Fishery (Area 2)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside sent a letter to Mackerel Managed Fishery (Area 2) individual licence holders advising of the proposed activity (Record of Consultation, reference 1.10), provided a Consultation Information Sheet, and referred to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.8).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Mackerel Managed Fishery (Area 2) 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to Mackerel Managed Fishery (Area 2) on 28 June 2023 based on their functions, interests or activities. • Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up letter seeking feedback on the proposed activities. • Woodside has provided Mackerel Managed Fishery (Area 2) with the opportunity to provide feedback over a 16-month period.		
West Coast Deep Sea Crustacean Managed Fishery		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside sent a letter to West Coast Deep Sea Crustacean Managed Fishery individual licence holders advising of the proposed activity (Record of Consultation, reference 1.10), provided a Consultation Information Sheet, and referred to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.8).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**

No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation regulation 25 of the Environment Regulations and consultation with West Coast Deep Sea Crustacean Managed Fishery 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to West Coast Deep Sea Crustacean Managed Fishery on 28 June 2023 based on their functions, interests or activities. • Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up letter seeking feedback on the proposed activities. • Woodside has provided West Coast Deep Sea Crustacean Managed Fishery with the opportunity to provide feedback over a 16-month period.		
Specimen Shell Managed Fishery		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside sent a letter to Specimen Shell Managed Fishery individual licence holders advising of the proposed activity (Record of Consultation, reference 1.10), provided a Consultation Information Sheet, and referred to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.8).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Specimen Shell Managed Fishery 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:		

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Specimen Shell Managed Fishery on 28 June 2023 based on their functions, interests or activities.
- Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided Specimen Shell Managed Fishery with the opportunity to provide feedback over a 16-month period.

Western Australian Sea Cucumber Fishery

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent a letter to Western Australian Sea Cucumber Fishery individual licence holders advising of the proposed activity (Record of Consultation, reference 1.10), provided a Consultation Information Sheet, and referred to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.8).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Western Australian Sea Cucumber Fishery 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Western Australian Sea Cucumber Fishery on 28 June 2023 based on their functions, interests or activities.
- Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided Western Australian Sea Cucumber Fishery with the opportunity to provide feedback over a 16-month period.

Onslow Prawn Managed Fishery

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent a letter to Onslow Prawn Managed Fishery advising of the proposed activity (Record of Consultation, reference 1.10), provided a Consultation Information Sheet, and referred to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.8).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. Woodside consulted relevant persons as per requirements of Environment Regulations to ensure they are aware of activities in the Operational Area, as referenced as PS 1.3 in this EP. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Onslow Prawn Managed Fishery 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Onslow Prawn Managed Fishery on 28 June 2023 based on their functions, interests or activities.
- Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided Onslow Prawn Managed Fishery with the opportunity to provide feedback over a 16-month period.

Exmouth Gulf Prawn Fishery

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent a letter to Exmouth Gulf Prawn Fishery advising of the proposed activity (Record of Consultation, reference 1.7), provided a Consultation Information Sheet, and referred to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.6).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received	Woodside has provided consultation information to DPIRD, WAFIC and individual	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of

despite follow up.	relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	this EP. No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Exmouth Gulf Prawn Fishery 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to Exmouth Gulf Prawn Fishery on 28 June 2023 based on their functions, interests or activities. • Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up letter seeking feedback on the proposed activities. • Woodside has provided Exmouth Gulf Prawn Fishery with the opportunity to provide feedback over a 16-month period.		
Pilbara Trap Fishery		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside sent an email to Pilbara Trap Fishery advising of the proposed activity (Record of Consultation, reference 1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.6).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Pilbara Trap Fishery 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.		

- Consultation Information provided to Pilbara Trap Fishery on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided Pilbara Trap Fishery with the opportunity to provide feedback over a 16-month period.

Pilbara Line Fishery

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent an email to Pilbara Line Fishery advising of the proposed activity (Record of Consultation, reference 1.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.6).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. Woodside consulted relevant persons as per requirements of Environment Regulations to ensure they are aware of activities in the Operational Area, as referenced as PS 1.3 in this EP. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Pilbara Line Fishery 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Pilbara Line Fishery on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided Pilbara Line Fishery with the opportunity to provide feedback over a 16-month period.

Western Australian Fishing Industry Council (WAFIC)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent an email to WAFIC advising of the proposed activity (Record of Consultation, reference 1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.7).

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside has assessed the relevancy of State fisheries issues in Section 4.9.2 of this EP. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on WAFIC's functions, interests or activities. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with WAFIC 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to WAFIC on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided WAFIC with the opportunity to provide feedback over a 16-month period.

Recreational marine users and representative bodies		
Exmouth Recreational Marine Users		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside sent an email to Exmouth Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 1.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.10).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. 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 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Exmouth Recreational Marine Users 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to Exmouth Recreational Marine Users on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up letter seeking feedback on the proposed activities. • Woodside has provided Exmouth Recreational Marine Users with the opportunity to provide feedback over a 16-month period.		
Gascoyne Recreational Marine Users		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside sent a letter to Gascoyne Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 1.11), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.		

- On 12 July 2023, Woodside sent a follow up letter (Record of Consultation, reference 2.9).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Gascoyne Recreational Marine Users 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Gascoyne Recreational Marine Users on 28 June 2023 based on their functions, interests or activities.
- Woodside referred to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided Gascoyne Recreational Marine Users with the opportunity to provide feedback over a 16-month period.

Recfishwest

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent an email to Recfishwest advising of the proposed activity (Record of Consultation, reference 1.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.10).
- **(1)** On 24 July 2023, Recfishwest sent an email to Woodside requesting to be kept informed as activities progressed and noted with regard to decommissioning planning, that subsea structures may be suitable as artificial reefs and can be beneficial to recreational fishing experiences.
  - **(2)** It noted that based on the information provided, it has no objection to the proposed activities (SI Report, reference 11.1).
- **(1, 2)** On 1 August 2023, Woodside responded to Recfishwest and confirmed it had provided information to relevant fishery licence holders who have entitlements to fish within the proposed area. Woodside noted that it will continue to inform Recfishwest as activities progress (SI Report, reference 11.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Recfishwest requested to be kept informed as activities progressed and noted with regard to decommissioning planning, that subsea structures may be suitable as artificial reefs and can be beneficial to recreational fishing experiences.	**(1)** **Woodside assessment:** Woodside will keep Recfishwest informed of future developments relating to this project as and when required and noted Recfishwest's comments about artificial reefs. **Woodside response:** Woodside advised it would continue to inform Recfishwest as activities progressed.	**(1)** Not required.
(2) Based on the information provided, Recfishwest has no objection to the proposed activities.	**(2)** **Woodside assessment:** Woodside noted Recfishwest had no objection to the proposed activities. **Woodside response:** Woodside noted Recfishwest had no objection to the proposed activities.	**(2)** Not required.
Whilst feedback has been received, there were no objections or claims.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. 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 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address Recfishwest's functions, interests or activities. No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Recfishwest 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to Recfishwest on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has addressed and responded to Recfishwest over a 16-month period.		
Marine Tourism WA		

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent an email to Marine Tourism WA advising of the proposed activity (Record of Consultation, reference 1.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.10).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Marine Tourism WA 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Marine Tourism on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Marine Tourism with the opportunity to provide feedback over a 16-month period.

WA Game Fishing Association

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside sent an email to WAGFA advising of the proposed activity (Record of Consultation, reference 1.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.10).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or	Inclusion in Environment Plan

	Claim and Woodside's Response	
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. 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 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with WAGFA 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to WAGFA on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up email seeking feedback on the proposed activities. • Woodside has provided WAGFA with the opportunity to provide feedback over a 16-month period.		
Titleholders and Operators		
Carnarvon Energy		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed Carnarvon Energy advising of the proposed activity (Record of Consultation, reference 1.3), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, 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 7.2.3.1 of	No additional measures or controls are required.

	the EP).	
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Carnarvon Energy 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to Carnarvon Energy on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up email seeking feedback on the proposed activities. • Woodside has provided Carnarvon Energy with the opportunity to provide feedback over a 16-month period.		
Energy Resources		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed Energy Resources advising of the proposed activity (Record of Consultation, reference 1.3), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Energy Resources 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback. • Consultation Information provided to Energy Resources on 28 June 2023 based on their functions, interests or activities. • Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community. • Woodside has sent a follow up email seeking feedback on the proposed activities.		

- Woodside has provided Energy Resources with the opportunity to provide feedback over a 16-month period.

Buru Energy

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Buru Energy advising of the proposed activity (Record of Consultation, reference 1.3), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Buru Energy 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Buru Energy on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Buru Energy with the opportunity to provide feedback over a 16-month period.

AGI Tubridgi

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed AGI Tubridgi advising of the proposed activity (Record of Consultation, reference 1.3), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan

No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with AGI Tubridgi 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to AGI Tubridgi on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow upemail seeking feedback on the proposed activities.
- Woodside has provided AGI Tubridgi with the opportunity to provide feedback over a 16-month period.

Allasso Energy

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Allasso Energy advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Allasso Energy 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.

- Consultation Information provided to Allasso Energy on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Allasso Energy with the opportunity to provide feedback over a 16-month period.

Chevron Australia / Osaka Gas Gorgon/ Tokyo Gas Gorgon/ JERA Gorgon

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Chevron Australia advising of the proposed activity (Record of Consultation, reference 1.46) and provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.32).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside has provided Chevron with GIS shape files for the EP. 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 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address Chevron Australia's functions, interests or activities. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Chevron 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Chevron Australia on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Chevron Australia with the opportunity to provide feedback over a 16-month period.

Western Gas

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Western Gas advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Western Gas 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Western Gas on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Western Gas with the opportunity to provide feedback over a 16-month period.

Exxon Mobil Australia Resources Company

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Exxon Mobil Australia advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Exxon Mobil Australia 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.

- Consultation Information provided to Exxon Mobil Australia on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Exxon Mobil Australia with the opportunity to provide feedback over a 16-month period.

Shell Australia

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Shell Australia advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Shell Australia 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shell Australia on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Shell Australia with the opportunity to provide feedback over a 16-month period.

ENI Australia

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed ENI advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with ENI Australia 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to ENI Australia on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided ENI Australia with the opportunity to provide feedback over a 16-month period.

KUFPEC

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed KUFPEC advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with KUFPEC 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.

- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to KUFPEC on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided KUFPEC with the opportunity to provide feedback over a 16-month period.

Santos WA Northwest/Santos Offshore/Santos WA Southwest/Santos (BOL)/ Santos WA PVG

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Santos advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Santos 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Santos on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Santos with the opportunity to provide feedback over a 16-month period.

OMV Australia

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed OMV Australia advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with OMV Australia 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to OMV Australia on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided OMV Australia with the opportunity to provide feedback over a 16-month period.

KATO Energy/Kato Corowa

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Kato Energy advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with KATO Energy 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.

- Consultation Information provided to Kato Energy on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Kato Energy with the opportunity to provide feedback over a 16-month period.

INPEX Alpha

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed INPEX advising of the proposed activity (Record of Consultation, reference 1.3) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.2).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with INPEX 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to INPEX on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided INPEX with the opportunity to provide feedback over a 16-month period.

Peak Industry Representative bodies

Australian Energy Producers (AEP) (*formerly APPEA)*

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed AEP advising of the proposed activity (Record of Consultation, reference 1.1) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with AEP 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to AEP on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided AEP with the opportunity to provide feedback over a 16-month period.

Traditional Custodians and nominated representative corporations

Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)

NTGAC is established under the N*ative Title Act 199*3 by the Baiyungu people to represent the Baiyungu people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation:

NTGAC's nominated representative is the Yamatji Marlpa Aboriginal Corporation (YMAC) and the NTGAC executive officer and contact officer pursuant to the Corporations (Aboriginal and Torres Strait Islander) Act 2006 is employed by YMAC. Woodside has therefore consulted NTGAC via YMAC.

- On 19 June 2023, Woodside emailed NTGAC the Summary Information Sheet – Macedon Operations (Record of Consultation,1.32) and requested NTGAC's feedback (Record of Consultation,1.28).
- On 19 June 2023, NTGAC via YMAC emailed Woodside suggesting Woodside present to NTGAC on its activities (SI Report, reference 17.1).
- On 19 June 2023, Woodside emailed NTGAC via YMAC proposing details of a one-day consultation meeting (SI Report, reference 17.2).
- **(1)** On 20 June 2023, NTGAC via YMAC emailed Woodside to request Woodside fund YMAC's in-house environmental scientist to attend the consultation meeting (SI Report, reference 17.3).
- **(1)** On 20 June 2023, Woodside emailed NTGAC twice clarifying the due date for consultation, and confirming that Woodside would fund YMAC's environmental

scientist to attend the consultation meeting (SI Report, reference 17.4, 17.5).

- On 21 June 2023, NTGAC emailed Woodside confirming it would like to consult on the Macedon Operations (SI Report, reference 17.6).
- Between 21 June 2023 and 5 July 2023, Woodside and NTGAC exchanged emails about meeting on 15 August 2023 (SI Report, reference 17.7, 17.8, 17.9, 17.10).

Ongoing Engagement

- **(2)** On 17 July 2023, NTGAC via YMAC emailed Woodside a proposed consultation framework. YMAC advised NTGAC is not in a position to provide comments on consultation at this time (SI Report, reference 17.11). NTGAC would like to have a strategic planning workshop to develop benefits Woodside can provide under the consultation agreement and to discuss implementation of the framework.
- On 19 July 2023, Woodside emailed NTGAC via YMAC NOPSEMA's *Brochure and Guideline on Consultation and Draft Policy for managing gender-restricted information*, and asked NTGAC to advise Woodside if there were any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 17.12).
- On 19 July 2023, NTGAC via YMAC emailed a revised budget estimate to Woodside (SI Report, reference 17.13).
- On 24 July 2023, Woodside emailed NTGAC via YMAC proposing an agenda for the consultation meeting (SI Report, reference 17.14).
- **(2)** On 25 July 2023, Woodside emailed NTGAC via YMAC requesting a meeting to discuss YMAC's Draft Consultation Framework. The email also included Woodside's *Proposed Program of Ongoing Engagement with Traditional Custodians* (SI Report, reference 17.15).
- Between 28 July 2023 and 31 July 2023, Woodside and NTGAC via YMAC exchanged emails about a meeting (SI Report, references 17.16, 17.17, 17.18, 17.19).
- On 3 August 2023, Woodside emailed NTGAC/YMAC about an unrelated activity and thanked YMAC for a meeting held on 2 August 2023 and confirmed a meeting planned with NTGAC on 15 August 2023. Woodside also provided links to NOPSEMA's consultation documents, including links to the Brochure, Guideline and Policy documents (SI Report, reference 17.20).
- Between 9 August 2023 and 14 August 2023, Woodside and NTGAC via YMAC exchanged emails about meeting a meeting to be held on 15 August 2023 (SI Report, references 17.21, 17.22, 17.23).
- On 15 August 2023, Woodside presented to NTGAC about several EPs including an update on this EP (SI Report, reference 17.24). At the meeting Woodside:
  - Described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
  - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
  - Provided an update and overview of the Macedon activity.
  - Described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
  - Displayed and spoke to the EMBA for the Macedon activity, and the individual worst-case loss of containment scenarios identified. The Macedon activity is captured on Slide 33 & Slide 34 of the presentation.
  - Stated that Woodside wanted to understand how the functions, activities, or interests of NTGAC and the people it represents may be impacted by any of those activities.
  - Specifically asked the following:

        - How could these activities impact your cultural values, interests, and activities – does protecting the environment do enough to protect your cultural values?
        - What are your concerns about the proposed activities and what do you think we should do about them?
        - Is there anything you would like included in the EPs before submission?
        - Is there anyone else Woodside should consult with about the activities?
    - Advised that Woodside will continue to take feedback from NTGAC for the life of the EP.
    - Provided personal contact details for further feedback. Woodside provided NOPSEMA contact details, should NTGAC desire to provide feedback directly to the regulator.
- At the 15 August 2023 meeting NTGAC/YMAC asked the following questions and gave the following feedback:
    - **(3)** NTGAC stated that it did not consider that it had been consulted on other EP's based on engagement to date.
    - **(4)** YMAC asked about whale sightings and response. **(4)** Woodside replied that its response depended on the activity and controls, Marine Mammal Observers are implemented.
    - **(1, 2)** A proposed framework for consultation was discussed, involving Woodside funding a General Project Report to be written by an independent suitably qualified and experienced consultant, to be provided to NTGAC initially and then on to Woodside.
    - **(1)** Terms for ongoing engagement were discussed, including frequency, participation, and content in context of the proposed General Project Report
    - **(5)** NTGAC's Strategic Plan in relation to potential Woodside social investment opportunities were explored.
    - NTGAC stated its consultation expectations (two-way dialogue preferred over one-way presentations and requested that consultation meetings cover whole projects or phases rather than single EP activities which is too time consuming).
    - NTGAC requested that a table of EPs be submitted by December with a timeline.
- On 31 August 2023, Woodside emailed NGTAC/YMAC (SI Report, reference 17.25) to provide a copy of the presentation from 15 August 2023 and communicating Woodside's understanding of next actions:
    - **(2)** YMAC to provide a first draft of a consultation agreement.
    - **(1)** YMAC to prepare the first draft of a general report.
    - Woodside to provide a list of upcoming activities.
    - **(5)** Agreed to continue discussions relating to key community focus areas highlighted by NTGAC.
    - **(3)** Feedback from NTGAC on the appropriateness of the information given by Woodside (too technical) to enable NTGAC to provide feedback.
    - **(3)** The email also noted that Woodside considers consultation has commenced and is ongoing, however Woodside will work with NTGAC to develop the process further.
- On 31 August 2023, NTGAC via YMAC emailed Woodside confirming it would respond shortly to the outcomes as assessed by Woodside and requesting response to queries in relation to another activity (SI Report, reference 17.26).
- On 1 September 2023, Woodside emailed NGTAC via YMAC, acknowledging information requested will be provided as soon as possible (SI Report, reference 17.27).
- On 6 September 2023, Woodside emailed NTGAC/YMAC with responses to queries about the other activity (SI Report, reference 17.28).
- On 6 September 2023, NTGAC/YMAC emailed Woodside acknowledging information and noting it would pass over to its environmental scientist (SI Report, reference 17.29).

- **(2,5)** On 14 December 2023, Woodside emailed NTAGC via YMAC Woodside's *Program of Ongoing Consultation* and stated that Woodside is keen to progress negotiations for the groups which YMAC represent (SI Report, reference 17.30).
- On 21 December 2023, Woodside emailed NTGAC via YMAC with a list of activities, as requested (SI Report, reference 17.31).
- (2) On 28 February 2024, Woodside emailed NTGAC via YMAC a letter (SI Report, reference 17.32) setting out the draft terms of an agreement between NTGAC and Woodside. The agreement (among other things) included the following topics:
  - Sufficient Information
  - Reasonable Period.
  - Provision of Information
  - Objection or claims
  - Publications
  - Cost and termination.
- On 29 February 2024, NTGAC/YMAC emailed Woodside acknowledging receipt of the information (SI Report, reference 17.33).
- On 11 March 2024, Woodside emailed NTGAC via YMAC requesting the appropriate person to send correspondence regarding another activity (SI Report, reference 17.34)
- On 11 March 2024, Woodside emailed NTGAC via YMAC to ask if a previous contact provided was still current for NTGAC. (SI Report, reference 17.35)
- On 13 March 2024, Woodside emailed NTGAC via YMAC to resend correspondence asking for a relevant contact for this activity after a previous email bounced back. (SI Report, reference 17.36)
- Between 16 May and 26 June 2024, Woodside and NTGAC via YMAC exchanged emails about the possibility of Woodside attending NTGAC's next Board meeting to discuss upcoming EPs (SI Report, reference 17.37, 17.38, 17.39, 17.40, 17.41)
- (2) On 27 June 2024, Woodside emailed NTGAC via YMAC to follow-up on the status of its review of a consultation agreement provided on 25 February 2024 (SI Report, reference 17.42).
- **(2)** On 28 June 2024, NTGAC via YMAC emailed Woodside requesting a word version of the consultation agreement and provided a legal costs estimate (SI Report, reference17.43)
- (2) On 1 July 2024, Woodside emailed NTGAC via YMAC a word version of the consultation agreement and approved the legal costs estimate (17.44).
- **(2)** On 10 July 2024, NTGAC via YMAC emailed Woodside stating it would mark-up proposed amendments to the consultation plan and would confirm a date for a meeting as soon as possible (SI Report, reference 17.45).
- Between 30 July 2024 and 20 August 2024, Woodside and NTGAC via YMAC exchanged emails about a half-day meeting on 12 September 2024 (SI Report, references 17.46, 17.47, 17.48, 17.49)
- On 6 September 2024, Woodside and NTGAC had a phone call (SI Report, reference 17.50). Matters discussed relating to this EP:
  - The agenda for the meeting on 12 September 2024
  - Staffing updates
  - NTGAC thanked Woodside for efforts in making a personal connection.

- **(2)** On 10 September 2024, NTGAC via YMAC emailed Woodside a proposed agenda for its meeting on 12 September 2024 (SI Report, reference 17.51). NTGAC noted that it would respond to EP presentations and provide comment on Woodside's draft consultation protocol.
- Between 10 September 2024 and 11 September 2024, NTGAC via YMAC and Woodside discussed the details regarding the 12 September 2024 meeting (SI Report, references 17.52 – 17.57).
- On 12 September 2024, Woodside and NTGAC/YMAC had a meeting (SI Report, reference 17.58). Matters discussed relating to this EP include:
  - Woodside confirmed attendees were familiar with EPs and NOPSEMA. Attendees acknowledged they were.
  - **(5)** Woodside outlined the ways it is partnering with Indigenous communities.
  - Woodside provided an opportunity to discuss any Woodside activities or other matters important to NTGAC.
  - Woodside acknowledged Lore Time is in progress and outlined upcoming EP consultations.
- On 3 October 2024, Woodside invited NTGAC/YMAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 17.59).

Woodside will continue to pursue an ongoing two-way relationship with NTGAC under the Proposed Program of Ongoing Engagement with Traditional Custodians.

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) NTGAC requested funding for YMAC's in-house environmental scientist to attend a consultation meeting.	**(1)** **Woodside assessment:** Woodside supports reasonable requests for funding to support consultation. **Woodside response:** Woodside funded YMAC's environmental scientist to attend the face-to-face meeting on 15 Aug 2023 to support consultation.	**(1)** No additional measures or controls are required.
(2) NTGAC is developing the first draft of a Consultation Agreement and General Report. The proposal for the General Report is that it would outline the nature of the activities for each phase of the project and the risks associated with each of the relevant activities. Woodside is awaiting receipt of the initial draft of the General Report.	**(2)** **Woodside assessment:** Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, multiple face to face meetings with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding, and agreement to fund NTGAC/YMAC environmental scientist who was also present at the meetings. **Woodside response:** Separate from consultation under Regulation 25 for this activity, Woodside will establish a Consultation Agreement with NTGAC. The Consultation Agreement and General Report/s would be used to frame ongoing consultation to occur as part of Woodside's commitment to post Regulation 25	**(2)** Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans. This is described further in the Program of Ongoing Engagement with Traditional Custodians, (Appendix G). This includes continued engagement regarding NTGAC's proposed Consultation Framework which will be applied to ongoing consultation, and potential support for their Strategic Plan.

	consultation ongoing engagement.	
(3) NTGAC claimed it had not been consulted about the activity to date, stating it could not provide information on cultural values because the information provided had been too technical and that timeframes were not sufficient.	**(3)** **Woodside assessment:** Woodside does not agree with NTGAC's claim that it has not yet been consulted on the activity, or that information provided has been too technical. Woodside met with NTGAC nominated representatives, at locations of NTGAC's choice, on 15 Aug 2023, for multiple hour sessions where the activity was described face to face by Woodside project representatives, subject matter experts and First Nations relations advisers (see Section 4.14 for approach). This included specifically developed "plain English" material developed by First Nations personnel in collaboration with technical experts, maps, pictures and a short video visually communicating the drilling process. During the meeting, NTGAC and YMAC representatives were encouraged to control the pace of the engagement and seek clarification. NTGAC and YMAC asked questions about the activity which indicates that material was engaged with. Woodside has also funded YMAC's in-house environmental scientist to support consultation. **Woodside response**: Woodside has addressed and responded to NTGAC over 14 months, demonstrating a "reasonable period" of consultation.	**(3)** No additional measures or controls are required.
(4) During face-to-face engagements related to this activity and others, the NTGAC requested further information on topics related to this proposed activity which was responded to during the meetings: Whale sightings and response	**(4)** **Woodside assessment:** Woodside acknowledged the request for further information. **Woodside response:** Woodside responded to NTGAC's requests for further information during face to face engagements, and this was considered sufficient.	**(4)** No additional measures or controls are required.
(5) NTGAC want to explore social investment opportunities with Woodside which may then feed into NTGAC's Strategic Plan.	**(5)** **Woodside assessment:** Woodside is continuing to work with NTGAC regarding social investment opportunities. **Woodside response:** Woodside has assessed that the Framework for Ongoing Consultation with NTGAC is an	**(5)** Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans. This is described further in the Program of Ongoing Engagement with

	effective mechanism for exploring opportunities for alignment with NTGAC's Strategic Plan.	Traditional Custodians, (Appendix G). This includes continued engagement regarding NTGAC's proposed Consultation Framework which will be applied to ongoing consultation, and potential support for their Strategic Plan.
Woodside has addressed objections and claims as noted above.	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 7.2.3 of this EP).	Woodside has assessed the objections or claims raised by NTGAC. No additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment 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 5.5 of the EP. Specifically:

- Sufficient InformationWoodside sought direction on NTGAC's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at the location of NTGAC's choosing, with NTGAC nominated representatives. This meeting included information that was readily accessible and appropriate.
- Provided Consultation Information Sheet and Consultation Summary Sheets to NTGAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity in a digestible, plain English format. Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls to manage potential impacts to ALARP and acceptable levels.
- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Provided responses to questions asked about the activity through consultation. Through these questions, NTGAC have displayed an understanding of the activities under this Environment Plan.
- Advised that NTGAC can request that particular information provided in the consultation not be published (to align with regulation 25(4) of the Environment Regulations).
- Reasonable Period:Woodside published advertisements in a national, state, and relevant local newspapers including The Australian, The West Australian, North West Telegraph, Pilbara News, Midwest Times (7 June 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to NTGAC on 19 June 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to NTGAC over 17 months.

Woodside asked NTGAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since June 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. NTGAC has engaged with the detail of the activity asking related questions. The details of these

engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by regulation 25 of the Environment Regulations, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NTGAC functions, interests or activities.

Woodside does not agree with NTGAC's assertion that it has not yet been adequately consulted on the activity. Woodside has assessed the claims and feedback raised by NTGAC, as detailed later in this section alongside Woodside's response to the claims.

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.

Summary of information provided and record of consultation:

- On 19 June 2023, Woodside emailed BTAC the Summary Information Sheet – Macedon Operations (Record of Consultation – 1.32) and requested BTAC's feedback (Record of Consultation – 1.29).
- **(1)** On 19 June 2023, BTAC emailed Woodside confirming receipt of the information and noting that the Macedon EMBA appears to intersect with areas in which BTAC and Thalanyji People undertake activities and assert interests and values (SI Report, reference 18.1).
- (1) On 20 June 2023, Woodside emailed BTAC thanking it for its response (SI Report, reference 18.2).
- On 10 July 2023, Woodside spoke with BTAC by telephone.
- On 10 July 2023, Woodside emailed BTAC seeking feedback on the Macedon EP and other activities, and proposed mechanisms for ongoing consultation including reference to correspondence that had been ongoing since prior to Woodside sending BTAC the information regarding the Macedon Operations activity (SI Report, reference 18.3).
- **(2)** On 10 July 2023, BTAC emailed Woodside a letter regarding Woodside's commitment to ongoing consultation with BTAC across multiple activities (SI Report, reference 18.4).

Ongoing Consultation:

- (2) On 14 July 2023, Woodside emailed BTAC in response to BTAC's letter (SI Report, reference 18.5).
- On 19 July 2023, Woodside emailed BTAC NOPSEMA's *Brochure and Guideline on Consultation and Draft Policy for managing gender-restricted information*, and asking BTAC to advise Woodside if there are any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 18.6).
- On 19 July 2023, Woodside emailed BTAC proposing dates for a Teams meeting (SI Report, reference 18.7).
- On 19 July 2023, BTAC emailed Woodside accepting the Teams meeting (SI Report, reference 18.8).
- On 20 July 2023, Woodside emailed BTAC a draft presentation in advance of the Teams meeting. The Macedon Operations (Commonwealth) EP is noted on Slide 11 and slide 12 (SI Report, reference 18.9).
- On 21 July 2023, Woodside and BTAC exchanged emails to arrange a Teams meeting time and meeting attendees (SI Report, references 18.10,18.11, 18.12, 18.13, 18.14, 18.15, 18.16).
- (2) On 26 July 2023, Woodside emailed BTAC with a proposed *Program of Ongoing Engagement with Traditional Custodians* (SI Report, reference 18.17).
- On 26 July 2023, Woodside emailed BTAC the draft presentation initially sent on 20 July 2023, and sent an additional presentation about Woodside's Environment Plan consultation across multiple activities. The Macedon Operations (Commonwealth) EP is addressed on slides 45-48 (SI Report, reference 18.18).
- On 28 July 2023, Woodside and BTAC met via Teams.
- **O**n 28 July 2023, BTAC emailed Woodside with outcomes of the 28 July meeting (SI Report, reference 18.19), confirming:
  - Woodside wished to meet with BTAC board (or sub-committee) as soon as available to discuss offshore activities/EPs.
  - **(2)** Confirmed that Woodside would prepare a draft framework agreement to address consultations in relation to NOPSEMA matters
  - **(3)** The agreement would address capacity building
  - **(4)** the agreement would address cultural values mapping
  - **(5)** BTAC wants to enter into a costs agreement.
- On 31 July 2023, Woodside emailed BTAC responding to BTAC's summary of the meeting (SI Report, reference 18.20).

- **(4)** On 31 July 2023, Woodside emailed BTAC with three letters regarding a request for an ethnographic survey to inform multiple Woodside Environment Plans, a request for clarity on Sea Country areas of interest to BTAC in relation to another Environment Plan, and a request related to another activity (SI Report, reference 18.21).
- On 15 August 2023, Woodside emailed BTAC following up on correspondence provided on 31 July 2023 and proposing a meeting (SI Report, reference 18.22).
- On 22 August 2023, BTAC emailed Woodside stating it would be in a position to discuss matters in the next few weeks (SI Report, reference 18.23).
- On 23 August 2023, Woodside emailed BTAC acknowledging receipt of the email on 22 August 2023 and discussing another matter (SI Report, reference 18.24).
- **(2)** On 14 September 2023, BTAC emailed a letter to Woodside regarding a framework agreement with BTAC. The intent of the agreement would be to formalise a co-ordinated, streamlined approach to progressing meaningful ongoing engagement and consultation (SI Report, reference 18.25). Further:
  - **(2)** The letter included areas the agreed framework could address and confirmed that the agreed framework would allow BTAC to meaningfully comment on a range of issues including: How/whether EP activities could impact cultural values, interests and customary or organisational activities
  - **(3)** Appropriate ways for mitigating risk and ensuring ongoing social licence as well as support for capacity building such as through ranger programs, language and culture preservation programs.
  - **(5)** Attached to the letter was a second letter outlining a proposed cost recovery mechanism for consultation activities.
- On 14 September 2023, Woodside emailed BTAC acknowledging BTAC's email of 14 September 2023 and planning further review and discussion (SI Report, reference 18.26).
- **(5)** On 20 September 2023, BTAC emailed Woodside to see if Woodside is open to entering into the Cost Acceptance Letter tied to NOPSEMA-related matters (SI Report reference 18.27).
- On 20 September 2023, BTAC emailed Woodside to ask for an update on the status of the draft framework agreement recorded in meeting outcomes from 28/7/2023 (SI Report, 18.28).
- **(2, 5)** On 22 September 2023, Woodside emailed BTAC accepting BTAC's proposed consultation fee structure, the list of activities that Woodside has consulted BTAC on (including this activity) and advising that the draft framework agreement was under internal review (SI Report, reference 18.29).
- On 26 September 2023, BTAC emailed Woodside advising in a change of legal representation (SI Report, reference 18.30).
- On 27 September 2023, BTAC's new legal representative Banks-Smith & Associates (BSA) emailed Woodside confirming they act for BTAC (SI Report, reference 18.31).
- On 4 October 2023, Woodside emailed BTAC via BSA thanking BTAC and stating that Woodside looked forward to an ongoing relationship with BTAC and its legal representation (SI Report, reference 18.32).
- **(2)** On 13 October 2023, BTAC via BSA emailed Woodside confirming they act for BTAC on NOPSEMA matters. Among other things, they noted they required an indemnity clause in the proposed framework agreement against any court action that arose from a claim against BTAC in regard to the consultation they engaged on with Woodside EP's (SI Report, reference 18.33).
- **(2)** On 31 October 2023, BTAC via BSA emailed Woodside, requesting a response to the email about indemnifying BTAC (SI Report, reference 18.34).
- **(6)** On 1 November 2023, BTAC emailed Woodside inviting Woodside to present on Woodside activities at a 1-hour slot in the BTAC Common Law Holders meeting on 27 November 2023 (SI Report, reference 18.35).
- **(6)** On 1 November 2023, Woodside emailed BTAC accepting the offer to present at the Common Law Holders meeting and offering to pay costs for the meeting (SI Report, reference 18.36).

- **(2, 4)** On 2 November 2023, Woodside emailed BSA noting they would not agree to the request to indemnify BTAC against any court proceedings as a result of consultation they engage in with Woodside on EP's. Woodside reiterated their wish to progress the framework agreement to build their relationship with BTAC. Woodside again noted that they wish to progress other matters, including the commitment to mapping BTAC's Sea Country values (SI Report, reference 18.37).
- **(2)** On 2 November 2023, BSA emailed Woodside requesting more detail about Woodside not supporting the indemnity request (SI Report, reference 18.38).
- On 3 November 2023, BSA emailed Woodside confirming that BTAC would like Woodside to present to a BTAC members meeting on 27 November 2023 in Carnarvon (SI Report, reference 18.39).
- **(2)** On 18 November 2023, Woodside emailed BSA with further information about why they will not indemnify BTAC as requested in the 13 October 2023 email. Woodside explained that it could harm genuine engagement, may promote behaviours in others who may become aware of the indemnity by Woodside, and it would not be good practice to provide an indemnity in relation to the act or omission of other parties that Woodside would not necessarily engage with. Woodside again noted their commitment to build an ongoing relationship with BTAC (SI Report, reference 18.40).
- **(4,5,6)** On 27 November 2023, Woodside attended and presented at the BTAC Common Law Holders meeting. The one-hour timeslot did not allow for taking feedback in relation to EPs but the Common Law Holders meeting were made aware that Woodside had been attempting to meet since January, and had agreed to pay for reasonable consultation costs as well as fund the Sea Country mapping but that these offers had not been taken up (SI Report, reference 18.41).
- **(2)** On 7 December 2023, Woodside emailed BSA (SI Report, reference 18.42) requesting a response to the email of 18 November 2023 in relation to their request and Woodside's response on indemnification. Woodside noted that the framework agreement has not been finalised to date but would include the following:
  - Agreement between parties to consult in a meaningful and genuine manner.
  - Procedure Woodside will follow when a submission requires consultation, which would include notification and an invitation to meet.
  - Initial and ongoing consultation about activities.
  - How Thalanyji provides feedback and how to represent that feedback in submissions.
  - Agreed schedule of rates.
  - How to manage the outputs of consultation.
  - Woodside requested to meet to progress discussions with BTAC.
- **(4)** On 7 December 2023, Woodside emailed BTAC forwarding correspondence received from and correspondence sent to the previous CEO dated 20 February 2023 and dated 17 March 2023, confirming support for recording sea country values and confirming support for ethnographic assessment. Woodside confirmed support to pay reasonable costs for ethnographic support for mapping and recording Sea Country values. Woodside requested to be contacted to enable progress on the above matters (SI Report, reference 18.43).
- **(4)** On 7 December 2023, BTAC emailed Woodside suggesting a meeting on week of 15 January 2024 to discuss Sea Country mapping (SI Report, reference 18.44).
- **(2, 4)** On 12 December 2023, Woodside emailed BTAC via BSA noting a planned meeting on week of 15 January 2024 to discuss Sea Country mapping, and potentially the framework for consultation and current status of EPs (SI Report, reference 18.45).
- **(4)** On 12 December 2023, BTAC emailed Woodside with a proposed meeting time and date for the Sea Country mapping planning meeting (SI Report, reference 18.46).
- On 12 December 2023, BTAC emailed Woodside requesting a copy of the presentation to the Common Law Holders meeting (SI Report, reference 18.47).
- On 15 December 2023, BTAC emailed Woodside again requesting a copy of the presentation to the Common Law Holders meeting (SI Report, reference 18.48).
- On 18 December 2023, Woodside emailed BTAC a copy of the presentation as requested (SI Report, reference 18.49).
- **(4)** On 19 December 2023, Woodside emailed BTAC confirming the date of the Sea Country mapping planning meeting (SI Report, reference 18.50).

- **(4)** On 9 January 2024, Woodside emailed BTAC seeking to confirm the time and location of the Sea Country mapping planning meeting (SI Report, reference 18.51).
- On 16 January 2024, BTAC emailed Woodside confirming meeting of 17 January 2024 with BTAC and requesting the names of Woodside attendees (SI Report, reference 18.52).
- On 16 January 2024, Woodside emailed BTAC with the names of Woodside attendees, as requested (SI Report, reference 18.53).
- On 17 January 2024, Woodside met with BTAC (SI Report, reference 18.54) and discussed (among other things):
  - **(4)** Sea Country mapping, confirming:
  - BTAC choose their own experts for ethnographic survey.
  - BTAC retain intellectual property of material and may request information not be provided.
  - Fieldwork required with a preferred commencement in April, with Woodside personnel in attendance as guided by BTAC.
  - BTAC prefer early notice on EPs, if possible.
  - **(3)** BTAC keen on employment/training opportunities and opportunities for rangers.
  - BTAC to form a committee for consultation on EPs.
- **(3)** On 17 January 2024, Woodside emailed BTAC information about training pathways as discussed at the meeting with BTAC on 17 January 2024 (SI Report, reference 18.55).
- **(4)** On 8 February 2024, Woodside emailed BTAC following up on a quote for the Sea Country mapping (SI Report, reference 18.56)
- **(2)** On 28 February 2024, Woodside emailed BTAC a draft consultation agreement for BTAC's consideration (SI Report, reference 18.57)..
- On 28 February 2024, BTAC (via legal representative) emailed Woodside querying if Woodside had already signed a fee agreement with BTAC and if Woodside plans to cover the cost of BTAC obtaining legal advice to engage with Woodside (SI Report, reference 18.58).
- On 28 February 2024, Woodside emailed BTAC (via legal representative) stating that BTAC had been seeking the draft engagement framework provided. Woodside stated it required a cost estimate and advised that the refusal to provide a cost estimate hinders the progress of multiple matters with BTAC (SI Report, reference 18.59).
- On 11 March 2024, BTAC (via legal representative) emailed Woodside stating that the BTAC Board has now appointed liaison committees. BTAC (via legal representative) suggested a meeting should be arranged between these committees and Woodside, to discuss the way forward (SI Report, reference 18.60).
- On 22 May 2024, Woodside and BTAC met (SI Report, reference 18.61). Matters relating to this EP and others were discussed including:
  - **(3)** BTAC's interest in training and employment opportunities, particularly for mature candidates. BTAC will provide a list of people seeking employment while Woodside committed to providing information on training opportunities.
- **(3)** On 27 May 2024, Woodside and BTAC exchanged emails on training and employment opportunities (SI Report, references18.62, 18.63, 18.64).
- **(4)** On 13 June 2024, Woodside emailed BTAC to request an update on how Woodside can assist BTAC to articulate Sea Country values, and offering continued support for this work and an ethnographic survey (SI Report, reference 18.65).
- **(3)** On 18 June 2024, Woodside emailed BTAC with a contact for employment opportunities (SI Report, reference 18.66).
- **(2, 4)** On 19 June 2024, BTAC emailed Woodside a letter in response to the offer to support work to articulate sea country values (SI Report, reference 18.67). The letter outlined:
  - A proposed cultural mapping program to translate cultural values associated with the Thalanyji Area of Interest and appropriately manage impacts to Country.
  - That Thalanyji hold data sovereignty of the cultural mapping.

- A scope of works.
- A request that Woodside provide a draft agreement to formalise the cultural mapping program.

- **(4)** On 19 June 2024, Woodside emailed BTAC to provide a focal person for the work on Sea Country values and committed to engaging with BTAC on the Cultural Mapping Program (SI Report, reference 18.68).
- On 5 July 2024, BTAC emailed Woodside to follow-up on its email/letter of 19 June 2024 (SI Report, reference 18.69).
- On 5 July 2024, Woodside replied to BTAC's email and said it would respond to BTAC's email/letter of 19 June 2024 by the end of the month (SI Report, reference 18.70).
- On 23 July 2024, BTAC emailed Woodside offering to provide further information about its email/letter of 19 June 2024 (SI Report, reference 18.71)
- **(4)** On 31 July 2024, Woodside emailed BTAC in relation to its proposal for a cultural mapping proposal (SI Report, reference 18.72). In the email Woodside:
  - noted its expectation that the work would be an ethnographic assessment, focused on clarifying or defining the offshore areas that are relevant to the Thalanyji people
  - noted the scope BTAC had proposed was broader than Woodside expected and could support.
  - Offered to meet BTAC to develop a brief.
- On 9 September 2024, Woodside invited BTAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 18.73).
- **(2)** On 30 September 2024, Woodside emailed BTAC and BSA to provide an opportunity to raise any points for consideration on 10 October 2024 (SI Report, reference 18.74).
- On 3 October 2024, Woodside invited BTAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 18.75).

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) Stated that the activity may intersect with offshore areas in which BTAC and Thalanyji people undertake activities and assert interests and values.	**(1)** **Woodside assessment:** Woodside recognises BTAC and Thalanyji people as undertaking activities and asserting interests and values in the EMBA for this activity. **Woodside response:** Woodside has consulted with BTAC as a relevant organisation.	**(1)** BTAC have been consulted as a relevant organisation for this activity. No additional measures or controls are required.
(2) Requested Woodside supports BTAC in consultation via a consultation framework.	**(2)** **Woodside assessment:** Woodside acknowledges BTAC's request for a consultation agreement. **Woodside response:** BTAC has been advised of Woodside's commitment to further feedback in accordance with Woodside's approach to ongoing two-way consultation (see Section 5.6). This will be facilitated	**(2)** Woodside will implement a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as Appendix G in this EP. BTAC's confirmation that it seeks an agreement for ongoing

	via the collaboration agreement being negotiated by Woodside and BTAC that will include support for recording and articulation of Sea Country values and aligns with Woodside's Program of Ongoing Engagement referenced as Appendix G in this EP.	consultation is aligned with the Program set out in Appendix G.
(3) Requested Woodside assist with capacity building including local emergency response.	**(3)** **Woodside assessment:** Woodside considers value in having rangers on the ground trained up in the highly unlikely event of an oil spill. It would be beneficial to an immediate response in an emergency situation. **Woodside response:** The Program of Ongoing Engagement with Traditional Custodians (Appendix G) contemplates capacity building for Indigenous oil spill response capability. Woodside will work with BTAC to address this claim through the planned consultation framework with BTAC.	**(3)** Woodside's Program of Ongoing Engagement with Traditional Custodians, Appendix G in this EP, includes support for capacity building for Indigenous oil spill response capability No additional measures or controls are required.
(4) BTAC has sought support from Woodside to enable BTAC to define and articulate its values on Sea Country in a manner that could be more clearly understood by the offshore sector, government, and the community.	**(4)** Woodside assessment: Woodside supports BTAC defining and articulating its sea country values. **Woodside response:** On 31 July 2023 Woodside issued letters offering support to BTAC in defining and articulating sea country values. Woodside has since followed up on those letters multiple times and is progressing with BTAC to commence this activity. BTAC has been provided reasonable time and sufficient information to provide information regarding sea country values. In the absence of this activity taking place, Woodside has updated the EP to include a review of publicly available literature relevant to the Thalanyji people (Section 4.9.1.6), and a further section on details of Thalanyji sea country (Section 4.9.1.8).	**(4)** BTAC has been provided reasonable time and sufficient information to provide information regarding sea country values. In the absence of sea country mapping, Woodside has updated the EP to include a review of publicly available literature relevant to the Thalanyji people (Section 4.9.1.6), and a further section on details of Thalanyji sea country (Section 4.9.1.8). Should the sea country mapping activity take place, any information arising from it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).
(5) BTAC does not endorse any consultation without appropriate cost recovery.	**(5)** **Woodside assessment:** BTAC's letter of 14 September 2023 confirms that BTAC is amenable to progressing a consultation agreement with Woodside, for ongoing engagement and consultation. **Woodside response:** Woodside has responded to this letter and will continue to progress towards this agreement. Woodside continues to offer support for	**(5)** Woodside will implement a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as Appendix G in this EP. BTAC's confirmation that it seeks an agreement for ongoing

	recording of cultural values, as per item (4) above**.**	consultation is aligned with this Program.
(6) BTAC invited Woodside to present at the BTAC Common Law Holders meeting.	**(6)** **Woodside assessment:** Woodside supports consultation with Traditional Owner groups. **Woodside response:** Woodside presented at the Common Law Holders meeting, as outlined in the Record of Consultation above.	**(6)** The Record of Consultation has been updated to reflect the outcomes of Woodside's presentation to the Common Law Holders meeting.
While feedback has been received, there were no objections or claims	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 7.2.3 of this EP).	Based on the engagement to date, no additional measures or controls are required.

Outcomes of consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment 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 5.5 of the EP. Specifically:

Sufficient Information:

- Woodside sought direction on BTAC's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at the location of BTAC's choosing, with BTAC nominated representatives. This meeting included information that was readily accessible and appropriate.
- Consultation Information Sheet was publicly available on the Woodside website since June 2023.
- Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to BTAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and interested individuals.
- Provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".

Reasonable Period:

- Woodside published advertisements in a national, state, and relevant local newspapers including The Australian, The West Australian, North West Telegraph, Pilbara News, Midwest Times (7 June 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside commenced consultation with BTAC on 19 June 2023. Woodside has since addressed and responded to BTAC queries over 17months.
- Woodside advised that BTAC could request the particular information provided in the consultation not be published (to align with regulation 25(4) of the environment Regulations).
- Woodside asked BTAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

- Woodside has provided a reasonable opportunity for input since June 2023 and a genuine two-way dialogue has occurred via discussions and written exchanges to further understand the environment in which the activity will take place. BTAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by regulation 25 of the Environment Regulations, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on BTAC's functions, interests or activities.

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.

Summary of information provided and record of consultation:

The Yinggarda Aboriginal Corporation's nominated representative is Gumala Aboriginal Corporation (GAC).

- On 19 June 2023, Woodside emailed YAC the Summary Information Sheet – Macedon Operations and requested YAC's feedback (Record of Consultation, reference1.30.)
- On 20 June 2023, Woodside emailed YAC correcting the due date for feedback to be received (SI Report, reference 19.1).
- On 21 June 2023, YAC emailed Woodside proposing a meeting with the YAC Board on 5 July 2023, to present on Environment Plans for other activities (SI Report, reference 19.2).
- On 21 June 2023, Woodside confirmed it was available to meet on 5 July 2023 (SI Report, reference 19.3).
- On 5 July 2023, Woodside presented at a meeting with YAC on a range of activities and Environment Plans, including the Macedon Operations Environment Plan (SI Report, reference 19.4). At the 5 July 2023 meeting, YAC asked the following questions and provided feedback:
  - **(1)** Whether Woodside had undertaken environmental studies and whether these studies were ongoing;
  - **(2)** What environmental monitoring happened after the EPs were approved;
  - **(1, 2)** Woodside responded that numerous environmental studies are undertaken, and they form part of the EPs, some information about ongoing commitments and research studies are available on Woodside's website. Woodside notes that they commit to ongoing consultation with YAC and will take feedback if any new information in relation to risks comes to light.
  - **(3)** YAC expressed sadness at the potential for environmental impact including plants and animals.
  - **(3)** Woodside responded that potential impact from unplanned activities is very low and that they had not had a serious unplanned environmental impact in over 30 years. Woodside also responded to specific examples such as vessel collision with migratory species (e.g., whales) and stated that it would comply with regulatory requirements for interaction with marine fauna. Woodside would also adhere to defined observation and exclusion zones and implement adaptive management where required.
  - **(4)** YAC expressed interest in a ranger program to assist with environmental management and monitoring
- On 5 July 2023, YAC emailed Woodside seeking a copy of the presentation from the 5 July 2023 meeting. Woodside provided this on 6 July 2023 (SI Report, references 19.5, 19.6).

- On 17 July 2023, Woodside emailed YAC a letter summarising the 5 July 2023 meeting (SI Report, reference 19.7). Woodside advised:
  - The revision of this EP.
  - **(3)** That the potential impact from unplanned activities is very low.
  - **(1)** That Woodside had undertaken numerous environmental studies that form part of EPs.
  - **(2)** That environmental monitoring is an ongoing activity.
  - **(4)** That it looked forward to discussing ranger programs with YAC as part of ongoing engagement.
- On 19 July 2023, Woodside emailed YAC NOPSEMA's *Brochure and Guideline on Consultation and Draft Policy for managing gender-restricted information*, and asked YAC to advise Woodside if there are any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 19.8).
- On 19 July 2023, YAC emailed Woodside thanking it for NOPSEMA's guidelines (SI Report, reference 19.9).

Ongoing Consultation:

- On 26 July 2023, Woodside emailed YAC its proposed *Program of Ongoing Engagement with Traditional Custodians* (SI Report, reference 19.10).
- On 2 August 2023, YAC's legal representative emailed Woodside to indicate it had been placed on a retainer by YAC to advise on NOPSEMA matters (SI Report, reference 19.11).
- On 3 August 2023, Woodside emailed YAC and its legal representative thanking them for this information (SI Report, reference 19.12).
- On 4 August 2023, YAC emailed Woodside (SI Report, reference 19.13) noting that:
  - YAC is willing to formally engage with Woodside on future NOPSEMA consultation.
  - **(5)** Woodside is invited to submit a consultation agreement for YAC's consideration.
  - **(6)** Resourcing would need to be provided by Woodside to facilitate this.
- On 10 August 2023, YAC emailed Woodside in relation to another activity (SI Report, reference 19.14) noting that:
  - Woodside had provided a considerable volume of videos, complex materials, and presentations to the YAC board since 1 July 2023, covering multiple proposed activities. The YAC board is seeking advice about different documents and considering cultural and spiritual impacts of proposed activities.
  - The YAC board had not yet concluded its investigations and provide feedback, and if Woodside has advanced plans with NOPSEMA it has different view of the role and capacity of TOs in the process as clarified by Santos v Tipakalippa.
  - **(6, 7)** Requesting appropriate resources and time for YAC board to allow them to form a considered view, as requested on 4 August 2023.
  - YAC board intends to raise matters at a community meeting in Carnarvon in September, including Aboriginal community members who are not YAC members.
- On 11 August 2023, YAC emailed Woodside confirming formal resolution by the Board to retain its lawyer to engage on NOPSEMA matters and providing a copy of the Board Resolution (SI Report, reference 19.15).
- **(5, 6)** On 11 August 2023, Woodside emailed YAC via its legal representative acknowledging the request for a draft consultation agreement, noting it would be attended to within a week and provided details about administrative matters relating to costs. The legal representative responded on 14 August 2023 acknowledging Woodside's email (SI Report, references 19.16, 19.17).
- **(5)** On 14 September 2023, Woodside emailed YAC via its legal representative with a proposed consultation framework (SI Report, reference 19.18).
- Between 14 September 2023 and 18 November 2023, Woodside and YAC's legal representative exchanged emails about the contents of the proposed consultation framework (SI Report, reference 19.19, 19.20, 19.21, 19.22).
- On 8 March 2024, Woodside emailed YAC a draft consultation agreement (SI Report, reference 19.23).

- On 12 March 2024, YAC via its legal representative emailed Woodside a proposed schedule of rates and indicated it would wait for a response before putting the consultation agreement before the YAC Board (SI Report, reference 19.24).
- On 4 April 2024, Woodside emailed YAC via its legal representative advising that Woodside had reviewed the Proposed Schedule Rates and asked for the date of the next Board meeting. (SI Report, reference 19.25).
- **(6)** On 8 April 2024, YAC via its legal representative emailed Woodside (SI Report, reference 19.26) advising the next YAC Board meeting would be held on 9 May 2024. The legal representative asked if Woodside would fund the cost of the meeting, how much time Woodside would require and asked for a list of matters for discussion to enable the preparation of a cost estimate for legal fees.
- **(6)** On 10 May 2024, Woodside emailed YAC via its legal representative (SI Report, reference 19.27) a request to meet with YAC either during or outside of a Board meeting, for 3 hours at YAC's preferred location. Woodside agreed to fund the meeting and requested a cost estimate. Proposed matters for discussion included:
  - EP consultation: overview and EPs current at the time of meeting.
  - Upcoming consultation.
  - Matters YAC would like to discuss.
  - Actions arising and next steps.
- On 20 June 2024, Woodside emailed YAC via its legal representative following up on the 10 May 2024 email and an email on another activity, to ask if the YAC Board would like to meet with Woodside for the purpose of consultation on an unrelated EP (SI Report, reference 19.28).
- On 20 June 2024, YAC via its legal representative emailed Woodside to confirm approval to proceed with a meeting between Woodside and the YAC Board (SI Report, reference 19.29).
- Between 20 June 2024 and 16 July 2024, Woodside, YAC and its legal representative exchanged emails and had a phone call about Woodside's attendance at YAC's Board meeting on 18 July 2024 (SI Report, references 19.30, 19.31, 19.32, 19.33, 19.34).
- On 18 July 2024, Woodside met with the YAC Board (SI Report, reference 19.35). Matters discussed relating to this EP included:
  - **(4)** Support for education and training including ranger programs.
  - **(5)** The possibility of setting up workshops to discuss the formalisation of an agreement between Woodside and YAC.
- **(4)** On 26 July 2024, Woodside emailed YAC. Among other things, Woodside advised it would keep YAC informed about ranger initiatives (SI Report, reference 19.36).
- On 9 September 2024, Woodside invited YAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 19.37). Feedback from the luncheon relevant to this EP include (SI Report, reference 19.38):
  - Woodside requested feedback on the attendee's knowledge of EPs.
  - Traditional Owners agreed the community lunches provided the ideal environment to learn and be consulted.
  - Traditional Owners thanked Woodside for providing an opportunity for senior elders and community members to learn and consult in an environment that was supportive of cultural traditions.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) YAC asked whether Woodside had undertaken environmental	**(1)** **Woodside assessment:** Woodside acknowledges	**(1)** Woodside considers the measures and controls described within this EP address YAC's

studies and whether these studies are ongoing.	YAC's interest in environmental studies. **Woodside response:** Woodside responded that it has undertaken numerous environmental studies that formed part of the EP and has an ongoing commitment to environmental studies and research, some of which are set out on Woodside's website.	feedback regarding environmental studies.
(2) YAC asked if environmental monitoring happened after the EPs were approved**.**	**(2)** **Woodside assessment:** Woodside acknowledges YAC's interest in environmental monitoring. **Woodside response:** Woodside responded that environmental monitoring is an ongoing activity, and the nature and timing of environmental monitoring depends on the nature, possible consequences, and likelihood of the environmental risks. Importantly, Woodside commits to ongoing consultation with YAC and will be able to take feedback if any new information in relation to risks comes to light.	**(2)** Woodside considers the measures addresses YAC's feedback regarding ongoing environmental monitoring.
(3) YAC expressed sadness about the potential for environmental impact on plants and animals.	**(3)** **Woodside assessment:** Woodside acknowledges YAC's interest in the potential for environmental impact on plants and animals. **Woodside response:** Woodside has explained that the potential impact from the unplanned activities is very low. For example, Woodside has been operating in the region for over 30 years and has not had a serious unplanned environmental event in that time. Importantly, if there is an unplanned event, the entire EMBA as shown on the maps will not be impacted. The area of the EMBA will be somewhere within the mapped area depending on factors such as wind, current and tide.	**(3)** Woodside considers the measures and controls described within this EP address YAC's feedback regarding potential environmental impacts.
(4) Ranger programs could assist with environmental management and monitoring.	**(4)** **Woodside assessment:** Woodside confirmed that opportunities associated with rangers will be addressed as part of our ongoing engagement. **Woodside response:** The capacity building contemplated for ranger programs is described in the proposed Program of Ongoing Engagement with Traditional Custodians in Appendix G in this EP.	**(4)** Woodside's proposed Program of Ongoing Engagement with Traditional Custodians, referenced in Appendix G in this EP, contemplates capacity building associated with ranger programs.

(5) YAC seeks a consultation agreement with Woodside.	**(5)** **Woodside assessment:** Woodside has confirmed and accepts that YAC is seeking to establish a framework agreement for the purposes of ongoing consultation with Woodside. **Woodside response:** Separate from consultation under regulation 25, Woodside will establish a framework agreement with YAC. The agreement will be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (e.g. maps) and project team attendance allowing opportunity to ask questions and seek further understanding.	**(5)** Woodside will implement a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, outlined in Appendix G in this EP.
(6) YAC requested appropriate resources to enable them to participate in consultation.	**(6)** **Woodside assessment:** Woodside supports reasonable funding for consultation. **Woodside response:** Woodside has offered to fund additional resources to support YAC to participate in consultation (e.g. 21 June 2023 email).	**(6)** Not applicable
(7) YAC requested appropriate time for consultation	**(7)** **Woodside assessment:** Woodside has provided YAC with reasonable time. **Woodside response:** Woodside has provided YAC reasonable time to participate in consultation since June 2023.	**(7)** Not applicable
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 7.2.3 of this EP).	Based on the engagement to date, no additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment 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 5.5 of the EP. Specifically:		

Sufficient Information:

- Woodside sought direction on YAC's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at the location of YAC's choosing, with YAC nominated representatives. This meeting included information that was readily accessible and appropriate.
- Consultation Information Sheet was publicly available on the Woodside website since June 2023.
- Provided Consultation Information Sheets and Consultation Summary Sheets to YAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity in a digestible, plain English format.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Provided responses to questions asked about the activity through consultation. Through these questions, YAC has displayed an understanding of the activities under this Environment Plan.
- Advised that YAC could request the particular information provided in the consultation not be published (to align with regulation 25(4) of the Environment Regulations).

Reasonable Period:

- Woodside published advertisements in a national, state, and relevant local newspapers including The Australian, The West Australian, North West Telegraph, Pilbara News, Midwest Times (7 June 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to YAC on 19 June 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to YAC over 17 months.

Woodside asked YAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since June 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. YAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by regulation 25 of the Environment Regulations, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on YAC's functions, interests or activities.

Wirrawandi Aboriginal Corporation (WAC)

WAC is established under the Native Title Act 1993 by the Mardudhunera and Yaburara people to represent the Mardudhunera and Yaburara people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation:

- On 20 June 2023, Woodside emailed WAC the Summary Information Sheet – Macedon Operations and requested WAC's feedback (Record of Consultation, reference 1.39.)
- On 20 June 2023, WAC emailed Woodside to suggest that Woodside schedule and fund a presentation to WAC to explain the projects and the potential impact areas that may be affected (SI Report, reference 22.1).
- On 20 June 2023, Woodside responded to WAC confirming that Woodside would fund this meeting and that Woodside would be in touch to plan the logistics of the meeting (SI Report, reference 22.2).
- On 21 June 2023, WAC emailed Woodside advising it would liaise the next day (SI Report, reference 22.3).
- On 22 June 2023, Woodside emailed WAC seeking clarification of meeting attendees, time and date (SI Report, reference 22.4).
- On 22 June 2023, WAC emailed Woodside advising it would discuss with the WAC General Manager and Board members (SI Report, reference 22.5).
- On 28 June 2023, WAC emailed Woodside a proposed meeting date and location and querying whether Woodside would fund travel for board members (SI Report, 22.6).
- On 28 June 2023, Woodside emailed WAC confirming the meeting date and confirming Woodside would fund travel (SI Report, reference 22.7).
- On 28 June 2023, WAC and Woodside exchanged emails about the number of people requiring travel. (SI Report, references 22.8, 22.9).
- On 6 July 2023, Woodside emailed WAC requesting the meeting time (SI Report, reference 22.10).
- On 18 July 2023, Woodside emailed WAC NOPSEMA's *Brochure and Guideline on Consultation and Draft Policy for managing gender-restricted information*, and asking WAC to advise Woodside if there are any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 22.11).
- On 19 July 2023, Woodside presented to the WAC board regarding the Macedon Operations Environment Plan and other activities (SI Report, reference 22.12). At the meeting, WAC:
  - **(1)** Queried the use of rangers in the event of an incident.
  - **(2)** Asked what would happen if there was an earthquake. **(2)** Woodside explained that infrastructure used is built to withstand earthquakes.
  - Sought clarification about the EMBA.
- **(1)** On 20 July 2023, Woodside emailed WAC a copy of the presentation of 19 July 2023 and advised among other things that Woodside would contact WAC about the ranger program (SI Report, reference 22.13).
- On 20 July 2023, WAC emailed Woodside thanking it for attending the meeting. WAC advised it would provide a formal response via the General Manager. WAC requested a list of the activities where WAC might be a relevant person for consultation, and a set of maps depicting EMBAs for the activities discussed at the meeting (SI Report, 22.14).

Ongoing Consultation

- On 26 July 2023, Woodside emailed WAC the proposed *Program of Ongoing Engagement with Traditional Custodians* (SI Report, reference 22.15).
- On 10 August 2023, Woodside emailed WAC in response to the email of 20 July 2023, with the list of activities for consultation with WAC, and maps of the EMBAs (SI Report, reference 22.16).
- On 10 August 2023, WAC emailed Woodside thanking them for the information, requesting further State waters EMBAs for other activities, and advising that from a from YM traditional owners' point of view, the distinction between Cth/State waters and EMBAs is artificial and arbitrary, reference 22.17).
- On 15 August 2023, Woodside emailed WAC acknowledging that the Commonwealth and State waters distinction is not compatible with the cultural lens of

Traditional Owners, and clarifying why the Macedon activity has a State waters EMBA (SI Report, reference 22.18).

- On 15 August 2023, WAC emailed Woodside thanking it for the clarification (SI Report, reference 22.19)
- **(3)** On 31 August 2023, WAC emailed Woodside proposing a framework agreement to provide a streamlined, formalised approach to consultation between WAC and Woodside (SI Report, reference 22.20).
- **(3)** On 11 September 2023, WAC emailed Woodside with a copy of the letter of 31 August 2023 (SI Report, reference 22.21), and advising that WAC does not object to Woodside progressing environment plans for the activities outlined on the proviso that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation with WAC and YM members in relation to activities the subject of EPs, as outlined in the attached letter on terms suitable to both parties within a reasonable period (nominally within the next 2-3 months).
- On 12 September 2023, Woodside emailed WAC confirming receipt of the email of 11 September 2023 (SI Report, reference 22.22)
- On 28 September 2023, Woodside emailed WAC with details of a focal point for EP consultation (SI Report, reference 22.23).
- On 3 October 2023, Woodside and WAC exchanged emails to set up a meeting (SI Report, references 22.24, 22.25, 22.26, 22.27).
- On 20 October 2023, Woodside and WAC met in Perth (SI Report, reference 22.28). The meeting was held with the new CEO and Chairperson to discuss current EPs and how parties intended to support each other through the process. WAC confirmed it would address all open EPs as a matter of priority. It was noted the WAC AGM would take place in approximately 10 days.
- On 19 December 2023, Woodside emailed WAC offering to provide any further information or meetings with regards to EPs (SI Report, reference 22.29).
- On 19 December 2023, WAC emailed Woodside thanking Woodside for its help and support throughout the year (SI Report, reference 22.30).
- On 1 February 2024, WAC emailed Woodside declining a previously scheduled meeting and apologised being unable to meet at the arranged time (SI Report, reference 22.31).
- On 1 February 2024, Woodside emailed WAC stating that another meeting could be scheduled and querying availability to meet in upcoming weeks (SI Report, reference 22.32).
- On 6 February 2024, WAC emailed Woodside advising of the change in roles and best point of contact moving forward (SI Report, reference 22.33).
- On 28 February 2024, Woodside emailed WAC and queried the best point of contact given recent changes within WAC (SI Report, reference 22.34).
- **(3)** On 6 March 2024, Woodside and WAC exchanged correspondence regarding the draft consultation framework sent to WAC by Woodside (SI Report, references 22.35, 22.36, 22.37). Woodside offered the opportunity to discuss further in person and offered support if needed. WAC requested a word copy which Woodside sent through.
- On 15 July 2024, Woodside met WAC and discussed three unrelated EPs (SI Report, reference 22.38).
- On 15 July 2024, WAC emailed Woodside to confirm details about the day's meeting and noted WAC was recruiting a General Manager (SI Report, reference 22.39).
- On 25 July 2024, Woodside attended a quarterly meeting of Traditional Custodian representatives. The meeting focussed on an unrelated EP (SI Report, reference 22.40).
- **(1)** On 20 August 2024, Woodside emailed WAC to provide information on the Ranger Program (SI Report, reference 22.41).
- **(3)** On 31 August 2024, WAC emailed Woodside a letter regarding an engagement framework proposal (SI Report, reference 22.42).
- **(3)** On 5 September 2024, Woodside emailed WAC a reminder email regarding the quarter 3 Heritage Meeting (SI Report, reference 22.43).
- On 9 September 2024, Woodside invited WAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 22.44).

- On 22 September 2024, Woodside emailed WAC to reschedule the quarter 3 Heritage Meeting to 10 October 2024, due to scheduling conflicts (SI Report, reference 22.45).
- On 30 September 2024, Woodside met with WAC to discuss staffing updates and other cultural items (SI Report, reference 22.46).
- **(3)** On 1 October 2024, WAC thanked Woodside by email for the recent catch up and invited Woodside to the next WAC Board Meeting (SI Report, reference 22.47).
- **(3)** On 1 October 2024, Woodside accepted WAC's invite to attend the next Board meeting (SI Report, reference 22.48).
- On 3 October 2024, Woodside invited WAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 22.49).
- On 10 October 2023, Woodside attended the quarter 3 Heritage Meeting with WAC. Matters discussed relating to this EP (SI Report, reference 22.50):
  - **(3)** Woodside provided explanations of EP's including regulatory requirements, EMBAs and the process to identify Relevant Persons.
  - **(3)** Woodside sought information on cultural values.
  - **(3)** Woodside shared a map of where activities are located, details of the activities and mitigation measures implemented for identified impacts.
- On 18 October 2024, Woodside wrote an internal note with feedback from the September monthly luncheon. Matters discussed relating to this EP (SI Report, reference 22.51):
  - Woodside requested feedback on the attendee's knowledge of EPs.
  - Traditional Owners agreed the community lunches provided the ideal environment to learn and be consulted.
  - Traditional Owners thanked Woodside for providing an opportunity for senior elders and community members to learn and consult in an environment that was supportive of cultural traditions.
- On 18 October 2024 and 24 October 2024, Woodside and WAC exchanged emails about the details for the upcoming WAC Board Meeting hosted on 28 October 2024, noting that Woodside was invited to attend (SI Report, reference 22.52, 22.53).

Quarterly Heritage Meetings

- Woodside convenes a quarterly meeting of Traditional Custodian representatives from the Representative Aboriginal Corporations involved in historical native title claims over the Burrup Peninsula, including WAC. Individual attendees are nominated by their representative Aboriginal Corporations. These meetings are summarised separately in this table.
- Copies of slides are made available to representative Aboriginal Corporations for the general awareness of members who were not able to attend individual meetings.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) During face-to-face engagement with the WAC board, WAC queried emergency preparedness and engagement of rangers for spill response	**(1)** **Woodside assessment:** Woodside acknowledged WAC's question. **Woodside response:** Woodside will address opportunities associated with rangers as part of our ongoing engagement. The capacity building contemplated for ranger programs is described in the proposed Program of Ongoing Engagement with	**(1)** Woodside's proposed Program of Ongoing Engagement with Traditional Custodians, referenced in Appendix G in this EP, contemplates capacity building associated with ranger programs. No additional measures or controls are required.

	Traditional Custodians in Appendix G in this EP	
(2) WAC has enquired what would happen if there was an earthquake.	**(2)** **Woodside assessment:** Woodside acknowledged WAC's question about earthquakes. **Woodside response:** Woodside has explained that its infrastructure is built to withstand earthquakes. WAC did not seek further information about earthquakes.	**(2)** No additional measures or controls are required
(3) WAC expressed that it does not object to Woodside progressing the proposed activity on the provision that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation.	**(3)** **Woodside assessment:** Woodside accepts that WAC is seeking to establish a framework agreement for the purposes of ongoing consultation with Woodside. Woodside notes that WAC does not object to Woodside progressing environment plans for the activities outlined on this basis. **Woodside response:** Separate from consultation under regulation 25, Woodside will establish a framework agreement with WAC. The agreement will be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (e.g. maps) and project team attendance allowing opportunity to ask questions and seek further understanding.	**(3)** Woodside will implement a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, outlined in Appendix G in this EP.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 7.2.3 of this EP).	Based on the engagement to date, no additional measures or controls are required.
Outcomes of consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment 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 5.5 of the EP. Specifically: **Sufficient Information:** • Woodside sought direction on WAC's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at a location of WAC's choosing. This meeting included information that was readily accessible and appropriate.		

- Consultation Information Sheet was publicly available on the Woodside website since June 2023.
- Provided Consultation Information Sheets and Consultation Summary Sheets to WAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity in a digestible, plain English format.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Provided responses to questions asked about the activity through consultation. Through these questions, WAC have displayed an understanding of the activities under this Environment Plan.
- Advised that WAC could request the particular information provided in the consultation not be published (to align with regulation 25(4) of the Environment Regulations)

Reasonable Period:

- Woodside published advertisements in a national, state, and relevant local newspapers including The Australian, The West Australian, North West Telegraph, Pilbara News, Midwest Times (7 June 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to WAC on 20 June 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to WAC over 17 months.
- Woodside asked WAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.
- Woodside has provided a reasonable opportunity for input since June 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. WAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by regulation 25 of the Environment Regulations, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on WAC's functions, interests or activities.

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.

Summary of information provided and record of consultation:

- On 20 June 2023, Woodside emailed RRKAC the Summary Information Sheet – Macedon Operations (Record of Consultation – 1.32) and requested RRKAC's feedback (Record of Consultation – 1.40.)
- On 18 July 2023, Woodside emailed RRKAC NOPSEMA's *Brochure and Guideline on Consultation and Draft Policy for managing gender-restricted information*, and

asking RRKAC to advise Woodside if there are any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 21.1).

Ongoing Consultation

- On 26 July 2023, Woodside emailed RRKAC the proposed *Program of Ongoing Engagement with Traditional Custodians* (SI Report, reference 21.2).
- **(1)** On 11 August 2023, RRKAC emailed Woodside (SI Report, reference 21.3) in regard to another activity (about which Woodside had emailed RRKAC on 9 August 2023), noting that the YM claim extends almost 10km out to sea and along the Jajiwurra estuary. RRKAC noted the interests of its Heritage Advisory Committee and Jajiwurra Rangers, including
  - Environmental monitoring training and packages of work;
  - Provision of the results of environmental monitoring activities;
  - Financial support to fund marine scientists to interpret monitoring data for RRKAC HAC;
  - Consultation with RRKAC in the event of a catastrophic event (such as an oil spill) or any other unforeseen consequences (such as longer-range disturbances to distribution of marine animals due to underwater seismic activity) – including inclusion of Jajiwurra Rangers in operational works to remedy these situations.
- **(1)** On 14 August 2023, Woodside emailed RRKAC asking for a time and date to meet to talk about training opportunities and Jajiwurra Rangers (SI Report, reference 21.4).
- On 14 August 2023, RRKAC emailed Woodside agreeing to a meeting and indicating they would arrange a suitable time for a discussion (SI Report, reference 21.5).
- On 11 September 2023, Woodside emailed RRKAC noting a planned meeting in October to discuss Jajiwurra Rangers, and following up on Environment Plans for other activities (SI Report, reference 21.6).
- **(2)** On 15 September 2023, RRKAC emailed Woodside advising it had noted Woodside's plans, and was not resourced to adequately respond, and would require Woodside to fund additional resources (SI Report, reference 21.7).
- **(2)** On 18 September 2023, Woodside sent two emails to RRKAC advising that Woodside would provide funding for consultation, and requesting RRKAC submit a quote (SI Report, references 21.8, 21.9).
- On 14 November 2023, Woodside emailed RRKAC (SI Report, reference 21.10) seeking to meet and discuss what support RRKAC may need in order to fully engage in consultation.
- On 14 November 2023, RRKAC responded to Woodside advising that RRKAC would line up an appropriate team member to respond to Woodside's request (SI Report, reference 21.11).
- On 16 November 2023, Woodside responded to RRKAC, noting that Woodside looked forward to hearing from RRKAC (SI Report, reference 21.12).
- On 19 December 2023, Woodside emailed RRKAC following up on any further support that RRKAC may need (SI Report, reference 21.13).
- On 11 January 2024, Woodside and RRKAC had a phone call (SI Report, reference 21.14). Matters discussed included:
  - RRKAC had recently employed new personnel, and once these people had settled in would be happy to consult with Woodside on relevant EPs.
  - RRKAC noted that some RRKAC Country is on the coast (and would be affected by an oil spill or another such environmental incident) but felt the EMBAs were too broad and covered areas too big and unfeasible.

- On 5 March 2024, RRKAC emailed Woodside responding to another activity, noting it expected to fill a team position that would enable it to respond to EP matters (SI Report, reference 21.15).
- On 5 March 2024, Woodside emailed RRKAC to acknowledge the email (SI Report, reference 21.16).
- On 18 March 2024, Woodside emailed RRKAC to follow up on proposed activities and asked if there was an opportunity to meet with the Board and interested members (SI Report, reference 21.17).
- **(1, 2)** On 20 March 2024, Woodside and RRKAC held an online meeting. Woodside outlined the purpose of engagement with Traditional Owner groups and PBCs, consultation on Environment Plans, feedback on heritage and cultural values, opportunities for engagement programs such as rangers and opportunities for future meetings (SI Report, reference 21.18).
- **(2)** On 26 March 2024, Woodside emailed RRKAC (SI Report, reference 21.19) to follow up on the meeting, and to outline the upcoming activities for consultation, that reasonable financial support is available for meetings for the purpose of consultation, to ask for guidance on its preferred next steps, and to provide Woodside's *Program of Ongoing Engagement*.
- On 5 July 2024, RRKAC emailed Woodside (SI Report, reference 21.20) in response to another activity and raised:
  - **(2)** Its lack of resourcing as an issue for consultation
  - **(3)** The potential for a bathymetric survey of the coastal shelf as a large-scale project with all affected groups
- **(3)** On 5 July 2024, Woodside emailed RRKAC and said it would enquire within Woodside about the potential of a bathymetric surveying project (SI report, reference 21.21).
- **(3)** On 29 July 2024, Woodside emailed RRKAC regarding bathymetric surveys and suggested that RRKAC and Woodside meet to discuss opportunities to use publicly available data to assist in generating information that might be useful to RRKAC (SI Report, reference 21.22).
- On 9 September 2024, Woodside invited RRKAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 21.23).

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) RRKAC have noted the interests of their Heritage Advisory Committee and their interests in upskilling and training their Jajiwurra Rangers including: • Environmental monitoring training and packages of work; • Provision of the results of environmental monitoring activities; • Financial support to fund marine scientists to interpret monitoring data for RRKAC Heritage Advisory Committee; • Consultation with RRKAC in the event of a catastrophic event (such as an oil spill) or any other unforeseen consequences (such as longer-range disturbances to	**(1)** **Woodside assessment:** The measures outlined in the proposed Program of Ongoing Engagement with Traditional Custodians in Appendix G of this EP include establishing support for Indigenous ranger programs via social investment, establishing support for programs identified by the Traditional Custodians as important to them and as agreed by Woodside. The Oil Pollution First Strike Response Plan in Appendix H includes notifications to relevant stakeholders should an incident occur. **Woodside response:** Woodside has advised that Woodside can provided funds to support consultation and requested that RRKAC provide a quote to enable Woodside to fund consultation activities. To date, the	**(1)** Woodside's proposed Program of Ongoing Engagement with Traditional Custodians referenced as Appendix G in this EP includes support for Indigenous ranger programs, noted as an area of interested by RRKAC.

distribution of marine animals due to underwater seismic activity) – including inclusion of Jajiwurra Rangers in operational works to remedy these situations.	offer of support has not been taken up. As outlined in the consultation summary above, sufficient information and a reasonable period had been provided to demonstrate that consultation for the purpose of regulation 25 is complete. Any further engagement with and support for RRKAC will be for the purpose of ongoing consultation.	
(2) RRKAC noted in response to a request for consultation on an EP for another activity that they are insufficiently resourced to fully engage and respond regarding EPs.	**(2)** **Woodside assessment:** RRKAC has had a reasonable opportunity to participate in consultation. RRKAC have noted the limitations on their resources, which Woodside will address via the proposed Program of Ongoing Engagement with Traditional Custodians. Woodside has confirmed it will be providing funding for consultation activities. Consultation with RRKAC has not identified any other groups or individuals relevant to communally held functions, activities or interests. **Woodside response:** RRKAC have been provided with reasonable time to respond with this information since the email from Woodside of 18 July specifically requesting this information, but no response to this request has been received.	**(2)** As identified in Section 6.10.3.1 of this EP, Woodside will continue to consult following acceptance of the EP, as required by the implementation strategy as set out in regulation 2(9) of the Environment Regulations and continue to progress with establishing a Framework Agreement as part of Woodside's Program of Ongoing Engagement with Traditional Custodians (Appendix G). This includes addressing RRKAC's resourcing issue for ongoing consultation via a Framework Agreement.
(3) RRKAC raised the potential of a bathymetric survey of the coastline working with all relevant coastal groups.	**(3)** **Woodside assessment:** Woodside does not have plans to conduct regional bathymetric surveys but there are publicly available datasets covering coastal regions. **Woodside response:** Woodside is seeking a meeting with RRKAC to find ways to interpret existing data sets to generate information which may be useful to RRKAC.	**(3)** Not required
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should 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 7.2.3 of this EP).	Based on the engagement to date, no additional measures or controls are required.
Outcomes of consultation		

Woodside has discharged its obligations for consultation under regulation 25 of the Environment 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 5.5 of the EP. Specifically:

Sufficient Information:

- Consultation Information Sheet was publicly available on the Woodside website since June 2023.
- Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to RRKAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Advised that RRKAC could request the particular information provided in the consultation not be published (to align with regulation 25(4) of the Environment Regulations).

Reasonable Period:

- Woodside published advertisements in a national, state, and relevant local newspapers including The Australian, The West Australian, North West Telegraph, Pilbara News, Midwest Times (7 June 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to RRKAC on 20 June 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to RRKAC over 17 months.
- Woodside asked RRKAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside engages in ongoing consultation, beyond that required by regulation 25 of the Environment Regulations, throughout the life of an EP. Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on RRKAC's functions, interests or activities.

Native Title Representative Bodies

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 but exist to assist native title claimants and holders.

Summary of information provided and record of consultation:

YMAC is the representative for NTGAC. Correspondence with NTGAC via YMAC is captured in the NTGAC section above.

- **(1)** On 12 June 2023, YMAC emailed Woodside on behalf of itself and its clients (SI Report, reference 20.1). The email attached:
  - A proposal to fund in-house expertise to support consultation and administration of the consultation framework.

- A draft consultation framework.

- **(1)** On 12 June 2023, Woodside response to YMAC by email, thanking them for the documents and that Woodside would respond shortly (SI Report, reference 20.2).
- On 25 July 2023, Woodside emailed YMAC (SI Report, reference 20.3):
  - Agreeing in principle to the draft consultation framework and funding proposal but seeking further discussion on details;
  - Attaching Woodside's Program for Ongoing Engagement with Traditional Custodians.
- On 3 October 2024, Woodside invited YMAC to share stories and receive updates from Woodside at its monthly luncheon for Traditional Owners (SI Report, reference 20.4).

Further correspondence with YMAC is captured in the NTGAC section above.

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) YMAC has provided feedback that it is seeking an industry funded position to support consultations for this and other activities and has provided a draft consultation framework to assist the consultation process.	**(1)** **Woodside assessment:** Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with YMAC and/or the groups it represents. This can address appropriate support for resourcing. **Woodside response:** Separate from consultation under regulation 25. Sufficient information to allow informed assessment has already been provided by other means.	**(1)** Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans. This is described further in the Program of Ongoing Engagement with Traditional Custodians, referenced as Appendix G in this EP.
While feedback has been received, there were no objections or claims.	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. Woodside has previously consulted with YMAC in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation, and YMAC has responded that it does not intend to provide substantive comment on the content of EPs. 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	Based on the engagement to date, no additional measures or controls are required.

	(See section 7.2.3 of this EP).	

Historical cultural heritage groups or organisations

Western Australian Museum (WAM)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Western Australian Museum advising of the proposed activity (Record of Consultation, reference 1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.16).
- On 26 July 2023, Western Australian Museum sent a letter to Woodside thanking it for informing of the company's proposal to submit the revised Macedon Operations EP (SI Report, reference 8.1). WAM:
  - **(1)** advised that Woodside is required to contact DCCEEW who would engage the WA Museum as its delegate if deemed necessary. WAM also advised that its feedback should be reviewed in conjunction with the Commonwealth Government's 'Underwater Cultural Heritage (UCH) Guidance for Offshore Developments' regarding UCH assessments, the potential for finding as yet unlocated UCH and proponents' legal responsibilities and Duty of Care requirements. (https://www.dcceew.gov.au/parks-heritage/heritage/publications/underwater-heritage-guidance-offshore). **(1)** No response required. Woodside has consulted DCCEEW for this activity and refers to Commonwealth Government guidance regarding UCH assessments.
  - **(2)** recommended that a UCH survey is carried out by a qualified and experienced maritime archaeologist(s). This may initially be a desktop survey based on existing data, if the resolution and coverage is sufficient; and asked Woodside to provide a thorough UCH desktop assessment copy when complete.
  - **(3)** asked Woodside to refer to the draft Guidelines for Working in the Near and Offshore Environment to Protect Underwater Cultural Heritage. **(3)** No response required. Woodside refers to the draft Guidelines for Working in the Near and Offshore Environment to Protect Underwater Cultural Heritage.
  - **(4)** asked Woodside to consult with Traditional Owners where appropriate.
- On 7 August 2023, Woodside emailed WAM (SI Report, reference 8.2) thanking it for its letter and responded that:
  - **(2)** Woodside has included the following control in the proposed EP:
    - Prior to seabed disturbance activities Woodside shall undertake a review of existing survey data by a suitably qualified marine archaeologist to undertake a UCH Desktop Assessment to identify Aboriginal and non-Aboriginal UCH within the project area.
  - **(4)** Woodside consults with Traditional Owners in the course of preparing Environment Plans and also engages in ongoing consultation subsequent to the approval of Environment Plans. The Traditional Owner identification and consultation methodologies and outcomes are described in the Environment Plan. No new controls have been identified in response to this item.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Advised that Woodside is required to contact DCCEEW.	**(1)** **Woodside assessment**: Woodside has consulted DCCEEW for this activity. **Woodside response:** Woodside consulted DCCEEW for this activity.	**(1)** Woodside assessed DCCEEW as a relevant person for this EP (see Appendix F, Table 1 of the EP) and consultation with DCCEEW is described in Appendix F, Table 2 of the EP.

(2) UCH survey is carried out by a qualified and experienced maritime archaeologist and provide UCH desktop assessment copy when complete.	**(2)** **Woodside assessment**: Woodside will undertake a review of existing data by a suitably qualified maritime archaeologist in depths of less than 130m prior to new seabed disturbance. Should potential UCH be identified, WAM will be notified as the delegated body under the *Underwater Cultural Heritage Act 2018*. **Woodside response:** Woodside advised it had included a control in the EP that prior to seabed disturbances, Woodside would undertake a review of existing data by a suitably qualified maritime archaeologist.	**(2)** Existing survey data will be reviewed by a suitably qualified maritime archaeologist prior to future seabed disturbing activities in areas where the seabed is less than 130m, in accordance with C4.1 of the EP. Should potential UCH be identified, WAM will be notified in accordance with C4.3 of the EP.
(3) Draft guidelines for working in near and offshore environment.	**(3)** **Woodside assessment**: Woodside refers to the Commonwealth Government's relevant underwater cultural guidance and draft guidelines. **Woodside response:** Woodside noted WAM's reference to the draft Guidelines.	**(3)** Not required.
(4) Consult with Traditional Owners.	**(4)** **Woodside assessment**: Woodside consults Traditional Owners in the course of preparing EPs. **Woodside response:** Woodside advised it consults with Traditional Owners in the course of preparing EPs and also engages in ongoing consultation subsequent to the approval of EPs.	**(4)** Woodside's methodology for consulting Traditional Owners is set out in Section 5 of the EP. Consultation with Traditional Owners is described in Appendix F, Tables 2 and 3 of the EP.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	The EP demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (Section 4.9.1). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7 of the EP. Woodside considers the measures and controls

		described are appropriate. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Western Australian Museum 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Western Australian Museum on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to Western Australian Museum over a 16-month period.

Local government and community representative groups or organisations

Shire of Ashburton

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Shire of Ashburton advising of the proposed activity (Record of Consultation, reference 1.19), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.17).
- On 13 July 2023, Shire of Ashburton sent a letter to Woodside (SI Report, reference 9.1) noting that the Shire's Strategic Community Plan for 2022-2023 recognises and supports the significant contribution that the oil and gas sector make to the economy and community. The Shire:
  - **(1)** raised no objection to proposed drilling maintenance and installation activities. **(1)** Woodside noted the Shire had no objection to the proposed activities.
  - The Shire asked for consideration of the following comments:

- **(2)** the Shire expects that Woodside will identify, manage and mitigate all possible impacts and risks in line with relevant regulatory frameworks.
- **(3)** the Aboriginal Cultural Heritage Inquiry System (ACHIS) should be consulted to ensure site of significance are not impacted without consents.
- **(4)** the Shire requires Woodside to brief the Shire's Local and District Emergency Management Committee's on its planned responses to such events before any activities commence.
- **(5)** asks that Woodside has communicated with appropriate emergency management agencies at either/or National, State, District and Local levels on potential hazards and risks around the activity; collaboration and/or cooperation on risk mitigation; considered impacted areas response capacity and capability and sustainability of response activities and escalation triggers.
- **(6)** the Shire anticipates that Woodside has undertaken their own emergency management planning to mitigate risk and recover from a risk related incident, has engaged with external emergency management agencies to ensure emergency management plans are aligned with outcomes to respond and/or recovery from the incident.
- **(7)** the Shire anticipates that Woodside has engaged with the community regarding what may happen in areas that are affected by the proposed activities.
- **(8)** part of the proposed activities are associated with future decommissioning works and that Woodside may consider the Shire operated Pilbara Regional Waste Management Facility (PRWMF) for its decommissioning, recycling and waste disposal purposes.
- **(9)** the Shire appreciates the opportunity to comment on the proposed activities and requests that Woodside provide the Shire with further updates as the proposal progresses.

- On 7 August 2023, Woodside responded (SI Report, reference 9.2) thanking the Shire for its comments and noted:
  - **(2)** That Woodside is required to manage environmental impacts and risks to the environment that may be affected (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 2009 (Environment Regulations), through the implementation of the EP. Woodside's proposed EPs will be submitted to the National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA) for assessment and acceptance.
  - **(3)** 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.
  - **(4)** Woodside welcomes the opportunity to brief the Shire on its approach to managing a hydrocarbon release in the highly unlikely event this occurs. Woodside asked the Shire to please advise whether the Shire would like a briefing prior to every activity or a high level overview and also advise on possible times for a meeting.
  - **(5)** Woodside has an Oil Pollution First Strike Plan in place for all EPs which details potential impacts, notifications and response mitigations that may be executed to manage an emergency event.
  - **(6)** Woodside developed oil spill preparedness and response positions tailored for individual projects and consults with relevant external management agencies.
  - **(7)** Woodside consults relevant persons in the course of preparing an EP in accordance with Regulation 11A (now 25) of the Environment Regulations.
  - **(8)** The Shire's interest in ongoing local content opportunities. Woodside advised it aims to work with local business through employment and contracting opportunities where practical.
  - **(9)** Woodside would continue to provide the Shire with significant updates with respect to the proposed activities when relevant.

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
(1) Support for the contribution of oil and gas sector and raises no	**(1)** **Woodside assessment:** Woodside noted the Shire of	**(1)** Not required.

objection to proposed drilling commissioning and subsea installation activities.	Ashburton had no objection to the activity. **Woodside response:** Woodside noted the Shire of Ashburton had no objection to the activity.	
(2) Identifying, managing and mitigating all possible impacts and risks.	**(2)** **Woodside assessment:** Woodside has assessed environmental impacts and risks as well as mitigation and management measures in the EP. **Woodside response:** Woodside confirmed it is required to manage environmental impacts and risks to the environment by the proposed activities to ALARP, as per the Environment Regulations.	**(2)** Existing controls considered sufficient as described in Section 6 of this EP.
(3) Consulting ACHIS.	**(3)** **Woodside assessment:** Woodside utilises the Department of Planning, Land and Heritage Aboriginal Heritage Inquiry System. **Woodside response:** Woodside confirmed it routinely used ACHIS as part of the EP development process.	**(3)** For this EP a search of DPLH's Aboriginal Cultural Heritage Inquiry System was undertaken (see Appendix D of this EP).
(4) Brief the Shire's Local and District Emergency Management Committee.	**(4)** **Woodside assessment:** Woodside agrees there is merit in briefing the LEMC. **Woodside response:** Woodside welcomed the opportunity to brief the Shire at the LEMC meeting.	**(4)** Not required.
(5) Ensure Woodside is communicating with appropriate national and state emergency management agencies.	**(5)** **Woodside assessment:** Woodside's oil spill preparedness and response plans include communication with appropriate agencies. **Woodside response:** Woodside advised it has an Oil Pollution First Strike Plan in place for this EP which details potential impacts, notifications and response mitigations that may be executed to manage an emergency event.	**(5)** In the course of developing this EP, Woodside has developed oil spill preparedness and response positions (see Appendix H of this EP).
(6) Assumes Woodside has emergency manage planning in place.	**(6)** **Woodside assessment:** Woodside has developed oil spill preparedness and first response plans for this EP. **Woodside response:** Woodside confirmed it developed oil spill preparedness and response positions tailored for individual projects. Woodside consults with the relevant	**(6)** In the course of developing this EP, Woodside has developed oil spill preparedness and response positions (see Appendix H of this EP).

	external management agencies to ensure all emergency management plans are aligned with effective outcomes.	
(7) Woodside has engaged with the community.	**(7)** **Woodside assessment:** Woodside has consulted relevant persons whose functions, interests or activities may be impacted in accordance with regulation 11A (now 25). **Woodside response:** Woodside confirmed it consulted relevant persons in the course of preparing an EP, and as per Woodside's ongoing consultation approach, feedback and comments from relevant persons continue to be assessed and responded to, as required, throughout the life of an EP.	**(7)** Woodside consults relevant persons in the course of developing an EP as described in Section 5.3 of this EP.
(8) Consider future decommissioning works utilises the PRWMF.	**(8)** **Woodside assessment:** Woodside aims to work with local business through employment and contracting opportunities, where practical. **Woodside response:** Woodside noted the Shire's interest in ongoing local content opportunities.	**(8)** Not required.
(9) Provide updates as proposal progresses.	**(9)** **Woodside assessment:** Woodside will provide the Shire with updates when relevant. **Woodside response:** Woodside advised it will continue to provide the Shire with updates on the proposed activities when relevant.	**(9)** Woodside has implemented a consultation program to advise relevant persons of the PAP and provide opportunity to raise objections or claims.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	Woodside considers the measures and controls in the EP address the Shire of Ashburton's functions, interests or activities. No additional measures or controls are required.
Outcomes of Consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Shire of Ashburton 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: • Consultation Information Sheet publicly available on the Woodside website since June 2023. • Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.		

- Consultation Information provided to Shire of Ashburton on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has addressed and responded to Shire of Ashburton over a 16-month period.

Onslow Chamber of Commerce and Industry

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Onslow Chamber of Commerce advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.18).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Onslow Chamber of Commerce and Industry 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Onslow Chamber of Commerce on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Onslow Chamber of Commerce with the opportunity to provide feedback over a 16-month period.

Shire of Exmouth

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Shire of Exmouth advising of the proposed activity (Record of Consultation, reference 1.41), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.33).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Shire of Exmouth 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shire of Exmouth on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Shire of Exmouth with the opportunity to provide feedback over a 16-month period.

Exmouth Community Liaison Group

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Exmouth Community Liaison Group advising of the proposed activity (Record of Consultation, reference 1.43), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.34).
- On 27 July 2023, the Exmouth CLG met with Woodside and other companies and discussed a number of projects: - Woodside acknowledged the increase in consultation material the CLG members had been receiving and reminded members of the changes requiring consultation based on EMBAs, - Woodside presented a slide listing the EPs for which members had been consulted recently and potential EPs in the remainder of 2023, - No feedback was received regarding the EPs. All CLG members were emailed a copy of the meeting slides after the meeting (SI Report, reference 23.1).
- On 21 November 2023, Woodside presented to the Exmouth CLG on Woodside activities, including this EP. Woodside presented a slide listing EPs on which the CLG members had recently been consulted and EPs currently under consultation (SI report, reference 23.2).
  - No feedback was provided on this EP.
  - 12 individuals attended the meeting representing:
    - Exmouth Volunteer Marine Rescue
    - Gascoyne Development Commission

- Shire of Exmouth
- PHI Helicopters
- Bhagwan Marine
- Exmouth Chamber of Commerce and Industry
- Ningaloo Coast World Heritage Advisory Council
- Australia's Coral Coast Tourism
- Santos.

- On 6 March 2024, Woodside presented to the Exmouth CLG on Woodside activities, including this EP. Woodside presented a slide listing EPs on which the CLG members had recently been consulted and EPs currently under consultation (SI report, reference 23.3).
  - No feedback was provided on this EP.
  - 12 individuals attended the meeting.
- On 17July 2024, Woodside presented to the Exmouth CLG on Woodside activities, including this EP. Woodside presented a slide listing EPs on which the CLG members had recently been consulted and EPs currently under consultation (SI report, reference 23.4).
  - No feedback was provided on this EP.
  - 13 individuals attended the meeting.
  - No questions were raised by CLG members in attendance at the meeting.
- On 12 November 2024, Woodside presented to the Exmouth CLG on Woodside activities, including this EP. Woodside presented a slide listing EPs on which the CLG members had recently been consulted and EPs currently under consultation (SI report, reference 23.5).
  - No feedback was provided on this EP.
  - 13 individuals attended the meeting.

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Exmouth CLG 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.

- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Exmouth Community Liaison Group on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Exmouth Community Liaison Group with the opportunity to provide feedback over a 16-month period.

Shire of Carnarvon

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Shire of Carnarvon advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.35).
- **(1)** On 17 July 2023, the Shire of Carnarvon replied and requested further information about the project's potential impact on the Shire of Carnarvon and to share some modelling data (SI Report, reference 10.1).
- **(1)** On 18 July 2023, Woodside replied and advised the Shire of Carnarvon that as the Shire does not overlap the Macedon Operations EP it is not expected to be affected by planned impacts (SI Report, reference 10.2). However, as the Shire does fall within the modelled EMBA Woodside explained to the Shire, that in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release. Woodside advised that the controls to be implemented to prevent a vessel collision, as well as spill response arrangements (mitigation measures if there were to be a spill) are provided in the Mitigation and Management Measures - Table 3 in the Consultation Information Sheet or can be found on our website.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
(1) Shire of Carnarvon requested further clarification on the project's potential impact on the Shire.	**(1)** **Woodside assessment:** Woodside accepted the Shire required further information on the EMBA and potential impacts from the activity. **Woodside response:** Woodside responded with further detailed information on the EMBA and its impact on the Shire of Carnarvon. Woodside advised that the controls to be implemented to prevent a vessel collision, as well as spill response arrangements (mitigation measures if there were to be a spill) were provided in the Mitigation and Management Measures - Table 3 in the Consultation Information Sheet or could be found on its website.	**(1)** Not required.
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the	Woodside considers the measures and controls in the EP address the Shire of Carnarvon's

	EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	functions, interests or activities. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Shire of Carnarvon 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023
- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shire of Carnarvon on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Shire of Carnarvon with the opportunity to provide feedback over a 16-month period.

Carnarvon Chamber of Commerce and Industry

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed Carnarvon Chamber of Commerce advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.36).

Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Carnarvon Chamber of Commerce and Industry 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:

- Consultation Information Sheet publicly available on the Woodside website since June 2023.

- Woodside published advertisements in a national, state and relevant local newspapers on 7 June 2023 advising of the proposed activities and requesting feedback.
- Consultation Information provided to Carnarvon Chamber of Commerce on 28 June 2023 based on their functions, interests or activities.
- Woodside has provided a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Carnarvon Chamber of Commerce with the opportunity to provide feedback over a 16-month period.

Table 3: Engagement Report with Persons or Organisations Assessed as Not Relevant

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 3 denotes an item raised by a stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that item.

Other non-government groups or organisations		
350 Australia (350A)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed 350A advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.19).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
While 350A is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for 350A to provide feedback during the consultation process.		
Australian Conservation Foundation (ACF)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed ACF advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.19).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation		
While ACF is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ACF to provide feedback during the consultation process.		
Australian Marine Conservation Society (AMCS)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed AMCS advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.19).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
While AMCS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AMCS to provide feedback during the consultation process.		
Conservation Council of Western Australia (CCWA)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed CCWA advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.19).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation		
While CCWA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for CCWA to provide feedback during the consultation process.		
Greenpeace Australia Pacific (GAP)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed GAP advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.19).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1).	No additional measures or controls are required.
Outcomes of Consultation		
While GAP is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for GAP to provide feedback during the consultation process.		
Research institutes and local conservation groups or organisations		
Cape Conservation Group (CCG)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed ACF advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.20).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation		
While CCG 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 CCG to provide feedback during the consultation process.		
Protect Ningaloo		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed Protect Ningaloo advising of the proposed activity (Record of Consultation, reference 1.1) and provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 7 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.1).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, 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 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
While Protect Ningaloo 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 Protect Ningaloo to provide feedback during the consultation process.		
University of Western Australia (UWA)		
Summary of information provided and record of consultation: • On 28 June 2023, Woodside emailed UWA advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.21).		
Summary of Feedback, Objection or Claim	**Assessment of Merits of Feedback, Objection or Claim and Woodside's Response**	**Inclusion in Environment Plan**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.
Outcomes of Consultation		
While UWA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable		

period outside of regulatory requirements for UWA to provide feedback during the consultation process.

Western Australian Marine Science Institution (WAMSI)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed WAMSI advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.22)

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1).	No additional measures or controls are required.

Outcomes of Consultation

While WAMSI is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for WAMSI to provide feedback during the consultation process.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed CSIRO advising of the proposed activity (Record of Consultation, reference 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 12 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.23).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

While CSIRO is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for CSIRO to provide feedback during the consultation process.

Australian Institute of Marine Science (AIMS)

Summary of information provided and record of consultation:

- On 28 June 2023, Woodside emailed AIMS advising of the proposed activity (Record of Consultation, reference 1.26) 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 July 2023, Woodside sent a follow up email (Record of Consultation, reference 2.24).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.3.1 of the EP).	No additional measures or controls are required.

Outcomes of Consultation

While AIMS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AIMS to provide feedback during the consultation process.

RECORD OF CONSULTATION

TABLE OF CONTENTS

1. Initial Consultation

1.1 Email sent to Australian Border Force (ABF), Department of Industry, Science and Resources (DISR), Department of Transport (DoT), Australian Energy Producers (AEP – *formerly APPEA*), Department of Biodiversity, Conservation and Attractions (DBCA), Department of Mines, Industry Regulation and Safety (DMIRS), Protect Ningaloo (28 June 2023)

Dear Stakeholder

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore

	for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	

Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.2 Email sent to Department of Primary Industries and Regional Development (DPIRD) (28 June 2023)

Dear [Individual 1] and [Individual 2]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow

Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)
Relevant fisheries	**State fisheries** Operational Area: Mackerel Managed Fishery (Area 2), Marine Aquarium Managed Fishery, Pilbara Trap Managed Fishery (60 nm Only), Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery EMBA: Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery (Area 2 and Area 3), Marine Aquarium	**State fisheries** Operational Area: Exmouth Gulf Prawn Managed Fishery, Mackerel Managed Fishery (Area 2), Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery

	Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery, West Australian Sea Cucumber Fishery	

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.3 Email sent to Western Gas, Exxon Mobil Australia Resources Company, Shell Australia, Eni Australia, KUFPEC, Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG, OMV Australia, KATO Energy / KATO Corowa, INPEX Alpha, Energy Resources, Buru Energy, Carnarvon Energy, AGI Tubridgi, Allasso Energy (28 June 2023)

Dear Titleholder

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None

Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.4 Email sent to Australian Hydrographic Office (AHO), Australian Maritime Safety Authority (AMSA) – Marine Safety (28 June 2023)

Dear AHO / AMSA

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the

Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **A shipping lane map is also attached.** You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth)	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore

	• Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	

Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.5 Email sent to Australian Maritime Safety Authority (AMSA) – Marine Pollution (28 June 2023)

Dear [Individual 3]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum

Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance	Routine production Routine inspection, monitoring, maintenance and

	and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary

Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.6 Email sent to Australian Fisheries Management Authority (AFMA) (28 June 2023)

Dear AFMA

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority

(NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88

		PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)
Relevant fisheries	**<u>Commonwealth fisheries</u>** Operational Area: • None EMBA: • North West Slope Trawl Fishery • Western Deepwater Trawl Fishery	**<u>Commonwealth fisheries</u>** Operational Area: • None

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.7 Email sent to Exmouth Gulf Prawn, Pilbara Trap Fishery and Pilbara Line Fishery (28 June 2023)

Dear Fishery Stakeholder

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period

including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production. Routine inspection, monitoring,	Routine production Routine inspection, monitoring,

	maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	

Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)
Relevant fisheries	**State fisheries** Operational Area: Mackerel Managed Fishery (Area 2), Marine Aquamarine Fish Managed Fishery, Pilbara Trap Managed Fishery (60 nm Only), Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery EMBA: Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery (Area 2 and Area 3), Marine Aquamarine Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery, West Australian Sea Cucumber Fishery	**State fisheries** Operational Area: Exmouth Gulf Prawn Managed Fishery, Mackerel Managed Fishery (Area 2), Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.8 Email sent to Western Australian Fishing Industry Council (WAFIC) (28 June 2023)

Dear [Individual 4] and [Individual 5]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

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 directly and consulting fisheries assessed as having a potential for interaction in the EMBA via WAFIC.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth)	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located

	• Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None

Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)
Relevant fisheries	**State fisheries** Operational Area: Mackerel Managed Fishery (Area 2), Marine Aquamarine Fish Managed Fishery, Pilbara Trap Managed Fishery (60 nm Only), Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery EMBA: Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery (Area 2 and Area 3), Marine Aquamarine Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery, West Australian Sea Cucumber Fishery	**State fisheries** Operational Area: Exmouth Gulf Prawn Managed Fishery, Mackerel Managed Fishery (Area 2), Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery

Feedback:

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Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the

Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.9 Email sent to North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery, Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA), Tuna Australia (28 June 2023)

Dear Fishery Stakeholder

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Relevant fisheries	**Commonwealth fisheries** Operational Area: • None EMBA: • North West Slope Trawl Fishery • Western Deepwater Trawl Fishery	**Commonwealth fisheries** Operational Area: • None

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

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1.10 Letter sent to Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2), Onslow Prawn Managed Fishery, Western Australian Sea Cucumber Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery (28 June 2023)

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The EPs are being revised and resubmitted for the continued production of gas from the

Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
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Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

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Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	

Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
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Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)
Relevant fisheries	**State fisheries** Operational Area: Mackerel Managed Fishery (Area 2), Marine Aquamarine Fish Managed Fishery, Pilbara Trap Managed Fishery (60 nm Only), Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery EMBA: Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery (Area 2 and Area 3), Marine Aquamarine Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery, West	**State fisheries** Operational Area: Exmouth Gulf Prawn Managed Fishery, Mackerel Managed Fishery (Area 2), Marine Aquarium Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Trap Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Pilbara Line Fishery

	Australian Sea Cucumber Fishery	

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Sample Letter

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: 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 June 2023

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YENNETT PTY LTD
PO BOX 380
NORTH BEACH WA 6020

Dear Fishery Stakeholder

MACEDON OPERATIONS COMMONWEALTH AND STATE ENVIRONMENT PLANS

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

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Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

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Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88

		PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
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Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.11 Letter sent to Gascoyne Recreational Marine Users (28 June 2023)

Dear Stakeholder

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

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Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
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SAMPLE LETTER

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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 June 2023

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SILVERADO CHARTERS PTY LTD
P O BOX 114
HERNE HILL WA 6056

Dear Stakeholder

MACEDON OPERATIONS COMMONWEALTH AND STATE ENVIRIONMENT PLANS

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	

Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Petroleum *(Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.12 Email sent to Exmouth Recreational Marine Users, Recfishwest, Marine Tourism Association, WA Game Fishing Association (28 June 2023)

Dear Stakeholder

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
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Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23

		PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.13 Email sent to Department of Agriculture Fisheries and Forestry (DAFF) – Fisheries and Biosecurity (28 June 2023)

Dear DAFF – Fisheries and Biosecurity

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
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Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

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The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production. Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)
Relevant fisheries	**<u>Commonwealth fisheries</u>** Operational Area:	**<u>Commonwealth fisheries</u>** Operational Area:

	• None EMBA: • North West Slope Trawl Fishery • Western Deepwater Trawl Fishery	• None

Biosecurity:
With respect to the biosecurity matters, please note the following information below:

Environment description:

The Commonwealth Petroleum Activity Area is located in water depths of approximately 180 at the wells to 60 m deep at the State/Commonwealth waters boundary. The offshore portion of the State Petroleum Activity Area is located in water depths of 60m at the State/Commonwealth waters boundary to the Mean Low Water Mark (MLWM), with the majority of the 44km length of pipeline located in water depth of less than 30 m. Both are located on the continental shelf. The bathymetry within this marine environment is generally flat and has a gentle seaward gradient.

The seabed in the Commonwealth Petroleum Activity Area is likely to be dominated by soft sediment comprised of fine to coarse sands, which typify the sediments of the North West Marine Region.

In State waters, prior to pipeline construction, the seafloor was surveyed and a route was chosen that avoided significant benthic features. A narrow band of shallow subtidal beach rock / low relief reef is located approximately 800 m offshore from the shore crossing location. This feature comprises exposed rock with scattered corals (predominantly along the seaward edge), sponges and macroalgae. Scattered seagrass and algae were observed on both sides of the reef. Within the State water section of the pipeline there are no major reefs, however there are secondary features, such as areas of limestone pavement, raised pavement and low relief reef that were crossed (in the vicinity of the shore crossing). Further, corals, seagrasses and macroalgae occur at varying densities around the various reefs and uninhabited islands in the area, such as Lockyer Island and Hood Reef. The pipeline is a minimum of 2 km from these features in WA State waters.

The onshore component of the State Petroleum Activity Area is located within the wider Northern Carnarvon Basin across the boundary between the Fortescue and Carnarvon Botanical Districts and contains elements of both vegetation systems. Vegetation condition ranges from ‘Excellent’ to ‘Very Poor’/ ‘Completely Degraded’. The presence of buffel (*Cenchrus ciliaris*), reduces the condition rating due to the presence of the weed. Similarly, some areas were grazed by cattle, which impacts on vegetation condition.

Potential IMS risk	***IMS mitigation management***
Accidental introduction and establishment of invasive marine species	Vessels are required to comply with the Australian Biosecurity Act 2015, specifically the Australian Ballast Water Management Requirements (as defined under the Biosecurity Act 2015) (aligned with the International Convention for the Control and Management

of Ships' Ballast Water and Sediments) to prevent introducing IMS. Vessels will be assessed and managed to prevent the introduction of invasive marine species in accordance with Woodside's Petroleum DeepWater (PetDW) Invasive Marine Species Management Procedure (previously BHP's Invasive Marine Species Management Procedure). Woodside's PetDW Invasive Marine Species Management Plan includes a risk assessment process that is applied to vessels undertaking Activities. Based on the outcomes of each IMS risk assessment, Management measures commensurate with the risk (such as the treatment of internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **27 July 2023.**

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA) and the Petroleum Pipelines (Environment) Regulations 2012 (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.14 Email sent to Department of Defence (DoD) (28 June 2023)

Dear Department of Defence

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

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- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

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If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None

Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.15 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) (28 June 2023)

Dear DCCEEW

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells

and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
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- Four subsea wells (with potential for fifth)
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Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet

	Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	

Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
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Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.16 Email sent to Director of National Parks (DNP) (28 June 2023)

Dear Director of National Parks

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.
The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Australian Marine Parks (AMPs)
We note Australian Government Guidance on consultation activities and confirm that:

- The proposed activities are outside the boundaries of a proclaimed Australian Marine Parks, with the:
    - Macedon wells and pipeline in Commonwealth waters located approximately 2.8 km north-east of the Muiron Islands Marine Management Area (State Marine Park) (measured from the closest point of the Operational Area) and ~10 km north-east from the Ningaloo World Heritage (Recreational Use Zone) (measured from the closest point of the Commonwealth Operational Area).
    - The Macedon pipeline in State waters located approximately 33km east of the Ningaloo Marine Park; approximately 8km east of the Muiron Islands Marine Management Area; and approximately 1.5 km from Round Island and Locker Island Nature Reserves (measured from the closest point of the State Operational Area).
- We have assessed potential impacts and risks to Australian Marine Parks (AMPs) in the development of the proposed Environment Plans and believe that there are no planned impacts as part of planned activities that have potential to impact the values of the Marine Parks.
- The worst-case credible risk being assessed in these EPs is the remote likelihood of a vessel collision event resulting a spill of marine diesel to the marine environment. Through review of hydrocarbon spill modelling of this unplanned risk, and with consideration of a 50-ppb dissolved and 100 ppb entrained hydrocarbon thresholds, the following AMPs may be contacted in the event of a spill:

  - Gascoyne Marine Park
  - Montebello Marine Park
  - Ningaloo Marine Park
- For the Commonwealth EP, a Commonwealth Government-approved oil spill response plan will be in place for the duration of the activities. For the State EP, a State Government-approved oil spill response plan will be in place for the duration of the activities. For both, these will include notifications to relevant agencies and organisations as to the nature and scale of the event, as soon as practicable following an occurrence. The Director of National Parks will be advised if an environmental incident occurs that may impact on the values of the Marine Park.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonw	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	ealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwe	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary

	alth waters boundary ~ 60 m	
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have any feedback specific to the proposed activities described under the proposed

EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012 (WA)*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA or DMIRS.

1.17 Email sent to Department of Planning, Lands and Heritage (DPLH) (28 June 2023)

Dear DPLH

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore

Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.18 Email sent to Western Australian Museum (28 June 2023)

Dear Western Australian Museum

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads

- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached is a list of shipwrecks in State waters within the EMBA.**You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None

Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.19 Email sent to Shire of Ashburton – (28 June 2023)

Dear [Individual 6] and [Individual 7]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing

plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas

	waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	

Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.20 Email sent to Onslow Chamber of Commerce and Industry (28 June 2023)

Dear [Individual 8]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum

Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance	Routine production Routine inspection, monitoring, maintenance and

	and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary

Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.21 Email sent to Australian Conservation Foundation (ACF), Australian Marine Conservation Society (AMCS), Conservation Council of Western Australia (CCWA), Greenpeace Australia Pacific (GAP) Sea Shepherd Australia (SSA) and 350 Australia (350A) (28 June 2023)

Dear Stakeholder

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

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Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87

Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.22 Email sent to Cape Conservation Group (CCG) (28 June 2023)

Dear [Individual 9]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23

		PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28**

July 2023.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.23 Email sent to University of Western Australia (UWA) (28 June 2023)

Dear [Individual 10]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

Woodside is seeking your advice regarding any research activities that UWA may be undertaking that may overlap with our proposed activities.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore

Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.24 Email sent to Western Australian Marine Science Institution (WAMSI) (28 June 2023)

Dear [Individual 11]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas

Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

Woodside is seeking your advice regarding any research activities that WAMSI may be undertaking that may overlap with our proposed activities.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None

Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.25 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (28 June 2023)

Dear [Individual 12]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells

and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

Woodside is seeking your advice regarding any research activities that CSIRO may be undertaking that may overlap with our proposed activities.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore

	for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	

Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.26 Email sent to Australian Institute of Marine Science (AIMS) (28 June 2023)

Dear [Individual 13]

Woodside is planning to submit a five (5) year revision of the Macedon Operations

Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection,	Routine production Routine inspection,

	monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary

Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.28 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) via Yamatji Marlpa Aboriginal Corporation (YMAC) (19 June 2023)

Dear [Individual 14]

I hope this message finds you well. Further to our discussions and earlier correspondence regarding Woodside's proposed Scarborough, decommissioning, drilling, survey, and development activities, please find attached information about two additional activities:

- Angel Facility Operations – Woodside is planning to revise and resubmit the Angel Facility Operations EP to integrate drilling, subsea installation commissioning and production from the Lambert West Field, located around 126 km north-north-west of Dampier.
- Macedon Operations – Woodside is submitting a five yearly revision of the Macedon Operations Commonwealth and State EPs in accordance with State and Commonwealth Regulations. The Macedon gas field is located approximately 40 km north of Exmouth and 100 km west of Onslow.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned activities and unplanned events. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the EPs.

I have attached summary information sheets that explain the activities we plan to undertake, and detailed consultation information sheets can be found at the links below:

- lambert-west.pdf (woodside.com)
- macedon.pdf (woodside.com)

Woodside is seeking to understand the nature of the interests that Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) and its members may have in the 'environment that may be affected' (EMBA) by these activities. The EMBA is the total area over which unplanned events could have environmental impacts. The EMBA is set out in the attached Summary Information Sheets and consultation information sheets. In particular, we are interested in hearing:

- how the activities could impact your interests and activities and/or your cultural values
- your concerns about the proposed activities and what you think we should do about those concerns
- whether there are any other individuals, groups, or organisations you think we should talk to.

If you would like to speak with us, please let us know by **13 July 2023** and please also advise of your preferred method of consultation. If there is any support or specific information that you require as part of our engagement, please let me know as soon as possible.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation. Please click on the italicised text above to access this document.

Please provide feedback directly to me on the details below, to

Feedback@woodside.com.au, by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please also feel free to forward this email and the attached documents to NTGAC members and other people and organisations who you think may be interested as required. Woodside would be happy to speak with NTGAC members, the NTGAC Board and office holders and other interested parties.

We look forward to hearing from you.

As always please be in contact if you require further information and if Woodside can assist NTGAC in any way to participate in these processes.

1.29 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (19 June 2023)

Dear [Individual 15] and [Individual 16]

I hope this message finds you both well, and[Individual 16], thank you for your time on the phone last Friday. Further to our discussions and earlier correspondence regarding Woodside's proposed Scarborough, decommissioning, drilling, survey, and development activities, please find attached information about two additional activities:

- Angel Facility Operations – Woodside is planning to revise and resubmit the Angel Facility Operations EP to integrate drilling, subsea installation commissioning and production from the Lambert West Field, located around 126 km north-north-west of Dampier.
- Macedon Operations – Woodside is submitting a five yearly revision of the Macedon Operations Commonwealth and State EPs in accordance with State and Commonwealth Regulations. The Macedon gas field is located approximately 40 km north of Exmouth and 100 km west of Onslow.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned activities and unplanned events. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the EPs.

I have attached summary information sheets that explain the activities we plan to undertake, and detailed consultation information sheets can be found at the links below:

- lambert-west.pdf (woodside.com)
- macedon.pdf (woodside.com)

Woodside is seeking to understand the nature of the interests that Buurabalayji Thalanyji Aboriginal Corporation (BTAC) and its members may have in the 'environment that may be affected' (EMBA) by these activities. The EMBA is the total area over which unplanned events could have environmental impacts. The EMBA is set out in the attached Summary Information Sheets and consultation information sheets. In particular, we are interested in hearing:

- how the activities could impact your interests and activities and/or your cultural values
- your concerns about the proposed activities and what you think we should do about

those concerns

- whether there are any other individuals, groups, or organisations you think we should talk to.

If you would like to speak with us, please let us know by **13 July 2023** and please also advise of your preferred method of consultation. If there is any support or specific information that you require as part of our engagement, please let me know as soon as possible.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation. Please click on the italicised text above to access this document.

Please provide feedback directly to me on the details below, to Feedback@woodside.com.au, by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please also feel free to forward this email and the attached documents to BTAC members and other people and organisations who you think may be interested as required. Woodside would be pleased to speak with BTAC members, the BTAC Board and office holders and other interested parties.

We look forward to hearing from you and to continuing our work together, including on the ongoing consultation framework.

As always please be in contact if you require further information and please reach out if Woodside can assist BTAC in any way to participate in these processes.

Sincerely,

1.30 Email sent to Yinggarda Aboriginal Corporation (YAC) (19 June 2023)

Dear [Individual 17]

Firstly, thank you for your correspondence last Thursday regarding consultation about Woodside's Julimar and Goodwyn activities. I will respond separately about this with a view to seeking more time for these consultations with Yinggarda Aboriginal Corporation (YAC) on or before 6 July, that Woodside would be pleased assist with by way of funding reasonable costs.

Further my correspondence regarding Woodside's proposed Scarborough, decommissioning, drilling, survey, and development activities, please find attached information about two additional activities:

- Angel Facility Operations – Woodside is planning to revise and resubmit the Angel Facility Operations EP to integrate drilling, subsea installation commissioning and production from the Lambert West Field, located around 126 km north-north-west of Dampier.
- Macedon Operations – Woodside is submitting a five yearly revision of the Macedon Operations Commonwealth and State EPs in accordance with State and Commonwealth Regulations. The Macedon gas field is located approximately 40 km

north of Exmouth and 100 km west of Onslow.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned activities and unplanned events. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the EPs.

I have attached summary information sheets that explain the activities we plan to undertake, and detailed consultation information sheets can be found at the links below:

- lambert-west.pdf (woodside.com)
- macedon.pdf (woodside.com)

Woodside is seeking to understand the nature of the interests that YAC and its members may have in the 'environment that may be affected' (EMBA) by these activities. The EMBA is the total area over which unplanned events could have environmental impacts. The EMBA is set out in the attached Summary Information Sheets and consultation information sheets. In particular, we are interested in hearing:

- how the activities could impact your interests and activities and/or your cultural values
- your concerns about the proposed activities and what you think we should do about those concerns
- whether there are any other individuals, groups, or organisations you think we should talk to.

If you would like to speak with us, please let us know by **13 July 2023** and please also advise of your preferred method of consultation. If there is any support or specific information that you require as part of our engagement, please let me know as soon as possible.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation. Please click on the italicised text above to access this document.

Please provide feedback directly to me on the details below, to Feedback@woodside.com.au, by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please also feel free to forward this email and the attached documents to YAC members and other people and organisations who you think may be interested as required. Woodside would be happy to speak with YAC members, the YAC Board and office holders and other interested parties.

We look forward to hearing from you.

As always please be in contact if you require further information and if Woodside can assist YAC in any way to participate in these processes.

Sincerely,

1.32 Summary Consultation Information Sheet

Woodside Energy

CONSULTATION

INFORMATION SHEET

June 2023

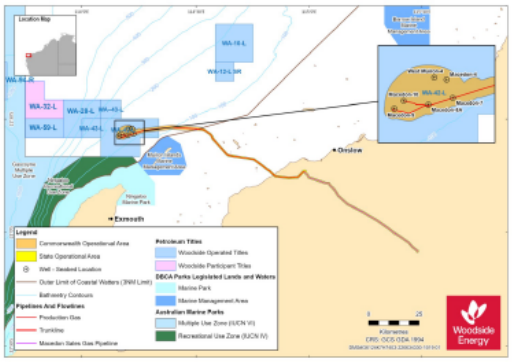
MACEDON OPERATIONS (COMMONWEALTH AND STATE)

This is a summary of the activity in plain English. More detailed information is included in the Activity Update – Macedon Operations Commonwealth and State Environment Plans (EPs) Information Sheet.

Overview

Woodside operates the Macedon project (previously operated by BHP Petroleum Pty Ltd) and is submitting a five yearly revision of the Macedon Operations Commonwealth and State EPs in accordance with State and Commonwealth regulations. The Macedon gas field is in Commonwealth waters, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia (WA). The Macedon gas plant is located approximately 17 km southwest of Onslow in the Pilbara region of WA. Gas produced from the Macedon field is transported via pipeline to the Macedon gas plant, and then into the Dampier to Bunbury Natural Gas Pipeline. The EPs are for the proposed continuation of operation, inspection, monitoring, maintenance and repair activities of the pipeline, production wells and subsea infrastructure.

The activities described above are planned to occur in the Commonwealth and State the Operational Area shown on the map below.



Work Program

Production

The Macedon project produces and transports gas from the offshore Macedon gas field through a subsea pipeline to the Macedon gas treatment and compression plant site near Onslow. Treated gas is then transferred into the Dampier to Bunbury Natural Gas Pipeline. Subsea wells and facilities are remotely controlled from the Macedon gas treatment and compression plant site.

Inspection and Monitoring

Woodside plans to continue to monitor and inspect infrastructure for changes on an ongoing basis. Various techniques are used for this including remote monitoring and visual inspection from submersible vessels, for example.

Maintenance and Repair

Maintenance of infrastructure is required at regular and/or planned intervals, and otherwise as required, to keep equipment in good condition and to prevent its deterioration or failure or breakages. There are many maintenance and repair activities including the opening and closing of valves and leak pressure testing.

Marine Activity Vessels

Operations support vessels will be used to undertake work on subsea pipeline and supporting infrastructure. The vessel size and type will be dependent on the work scope. The vessels are not expected to anchor during work activities unless in an emergency.

Onshore Activity Vehicles

Operations vehicles will be used to undertake work on onshore pipeline and supporting infrastructure. The vehicle size and type will be dependent on the work scope.

Environmental Impacts and Management

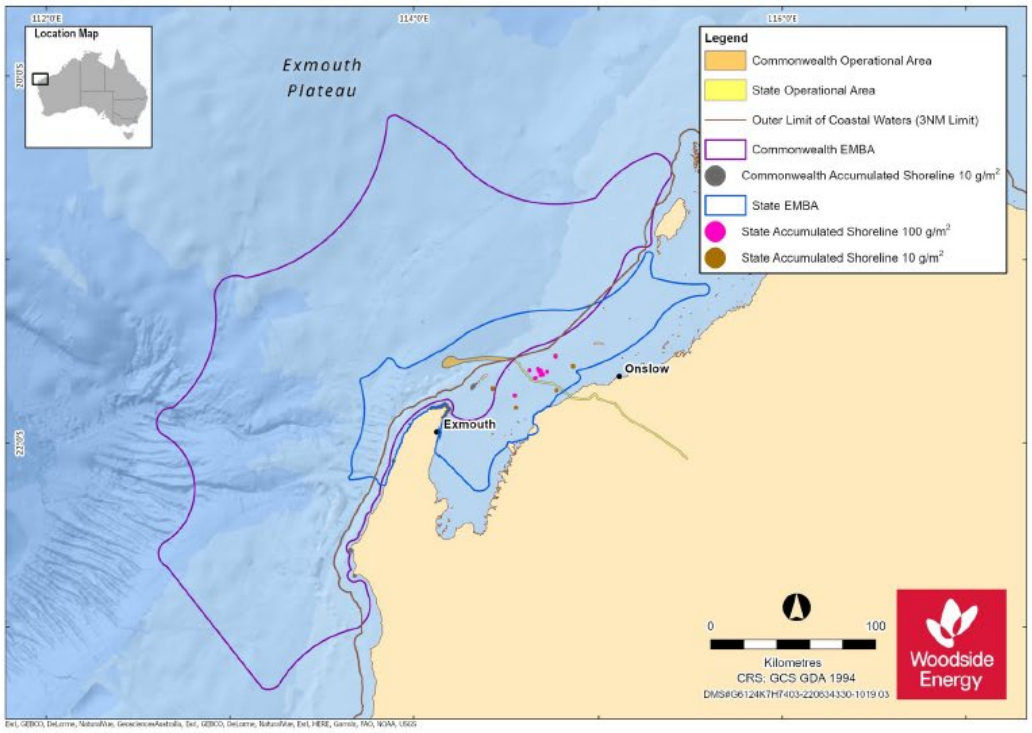
This proposed work program includes planned activities but may also result in unplanned events. Both planned activities and unplanned events may impact the environment. Woodside manages the work program to reduce impacts and risks to as low as reasonably practicable.

Planned activities are activities that Woodside knows will happen as part of this work program. For example, planned activities include other marine users being temporarily stopped from accessing the work area, and the marine vessels generating underwater noise, light emissions, atmospheric emissions, and routine discharges (such as sewage, waste, and deck drainage), and other authorised waste.

Unplanned events are not planned as part of the work program, but may be the result of an accident, incident, or emergency. Unplanned events might include a spill of diesel fuel from a vessel collision, a release of hydrocarbons from offshore wells, an accidental release of oil during use of remotely operated vehicles, unplanned seabed disturbance from a dropped object, accidental collision with marine animals, waste entering the environment, and the accidental introduction of invasive species from outside the region. Management measures will be in place to reduce the probability and impacts of these unplanned events to as low as reasonably practicable.

A table showing planned activities and unplanned events, potential impacts, and management measures for each is included in the Macedon Operations Commonwealth and State Environment Plans Information Sheet in Table 3. This Information Sheet is attached and available at www.woodside.com/docs/default-source/current-consultation-activities/macedon.pdf?sfvrsn=8f7481da_12.

The total area over which unplanned events could have environmental impacts is shown in the map below. This is referred to as the environment that may be affected (EMBA), which is predicted using computer modelling. In the highly unlikely event such as a fuel spill from a vessel collision or a hydrocarbon release from one of the wells or pipelines, the entire EMBA will not be affected. The part of the EMBA affected will only be known at the time of the event and will depend on several variables, such as the direction and strength of the wind, tide, and currents for example. Locations where oil may build up and contact the shoreline if there is an unplanned event are shown on the map below as 'Accumulated Shoreline'.



Providing Feedback

If you have an interest in the area of the "environment that may be affected" (EMBA) by this work program, and would like more information, have any concerns and / or any suggestions for how Woodside can minimise potential environmental impacts, you can tell Woodside by calling 1800 442 977 or send an email to Feedback@woodside.com.au. Please also tell Woodside if you know anyone else, or any organisation, who may be interested in these matters and feel free to pass this information to them.

If you would prefer to speak to the government directly, they can be contacted on +61 (0)8 6188 8700 or send an email to communications@nopsema.com.au.

Conclusion

Woodside produces energy that Western Australia, Australia, and the world needs. Woodside has made this energy from its oil and gas projects in Western Australia for over 35 years safely, reliably, and without any major environmental incident. Woodside is very proud of this legacy.

There are always potential risks with activities like this. Woodside has carefully planned this work program so that the risk of environmental impact is reduced to as low as reasonably practical and of an acceptable level. There are also strict government laws in place to protect the environment. Woodside complies with these laws and has systems in place to keep following these laws and rules for each project it undertakes.

If you would like information about Woodside's work to study and care for the environment, you can find it at www.woodside.com/sustainability/environment.

Further Information

The more detailed Information Sheet for this proposed activity can be found on Woodside's website at www.woodside.com/sustainability/consultation-activities. Please also contact Woodside directly on the details above and visit Woodside's website for further information about the company, its projects and environmental management.

www.woodside.com

Woodside Energy

1.33 Woodside Consultation Information Sheet

Woodside Energy

CONSULTATION

INFORMATION SHEET

June 2023

MACEDON OPERATIONS COMMONWEALTH AND STATE ENVIRONMENT PLANS

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside consults relevant persons in the course of preparing an environment plan (EP) to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that could be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. This is the intended outcome of consultation.

Woodside's aim is to ensure the proposed activity is carried out in a manner that is consistent with the principles of ecologically sustainable development (ESD), by which the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and to an acceptable level. We want relevant persons whose functions, interests or activities that may be affected by the proposed activity to have the opportunity to provide feedback on our proposed activity, in accordance with the intended outcome of consultation.

Overview

Woodside is submitting a revision of the Macedon Operations Commonwealth and State environment plans. The Macedon Operations (previously operated by BHP Petroleum Pty Ltd) involves the production of gas from the Macedon gas field located in Commonwealth waters via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. Treated gas is then transported through the Sales Gas Pipeline to an injection point on the Dampier to Bunbury Natural Gas Pipeline. The subsea infrastructure is operated remotely from the onshore Macedon Gas Plant via an umbilical.

The EPs are being resubmitted as five-yearly revisions in accordance with State and Commonwealth regulations.

Activity overview

The Scope of the EPs covers the following activities to be undertaken during the next five-year period including:

- Routine production and operations
- Routine inspection, monitoring, maintenance and repair (IMMR) activities of the:
  - Four subsea wells and pipeline located in Commonwealth waters
  - Two non-producing wells with wellheads
  - Wet Gas Pipeline located in State waters and onshore
  - Dry Sales Gas Pipeline located onshore
- Rehabilitation and remediation of the:
  - Onshore Wet Gas and Dry Sales Gas Pipelines.
- Non-routine and unplanned activities and incidents associated with the above

Development of an additional (new) gas production well from an adjacent reservoir (Muiron) may occur during the five-year period . Drilling and installation of additional infrastructure would be covered under a separate EP, however production, IMMR activities for routine and unplanned activities associated with production from the well are included in the scope of the Commonwealth EP revision.

Export of gas to other fields from the Macedon reservoir may also occur within the five-year period and is to be included within the Commonwealth EP revision.

Table 1 summarises the operational activities proposed to be undertaken for Macedon under the two EPs.

Location and Operations

The Macedon gas field is located in Commonwealth waters ranging from 120 to 180 m in depth, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia (WA). The Macedon Gas Plant is located approximately 17 km south west of Onslow in the Pilbara region of WA (**Figure 1**).

Inspection

Inspection of infrastructure is the process of physical verification and assessment of subsea components in order to detect changes compared to its installed state. Typical site inspection activities include visual surveys via a remotely operated vehicle, side scan sonar surveillance, cathodic protection measurements and ultrasonic pipe condition checks.

Monitoring

Monitoring is the surveillance of the physical and chemical environment around subsea infrastructure. Monitoring activities may include process composition, corrosion probes, corrosion mitigation checks, and metocean and geological monitoring.

Maintenance

Maintenance of infrastructure is required at regular and/or planned intervals to maintain performance reliability and prevent deterioration or failure of equipment. Maintenance activities may include cycling of valves and leak pressure testing.

Repair

Repair activities are those required when a subsea system or component is degraded or damaged as defined by design codes.

Decommissioning

Macedon-4 and West Murion-4 are non-producing wells with wellheads. They are both plugged and suspended. They are to continue to be monitored and maintained until they are plugged and abandoned and the wellheads decommissioned. The plug and abandonment and decommissioning activities are proposed to be the subject of separate EPs.

Marine Activity Vessels

Operations support vessels will be used to undertake IMMR of subsea infrastructure. The vessel size and type will be dependent on the work scope. The vessels will not anchor during IMMR activities unless there is an emergency.

Onshore Activity Vehicles

Operations vehicles will be used to undertake IMMR of onshore pipeline and supporting infrastructure. The vehicle size and type will be dependent on the work scope.

Assessment

Woodside has undertaken an assessment to identify potential risks to the marine environment, terrestrial environment, cultural heritage, other activities and relevant persons, considering timing, duration, location and potential impacts arising from the planned activities. A number of mitigation and management measures are to be implemented and are summarised in **Table 2**. Further details are to be provided in the EPs.

In preparing the EPs, Woodside's intent is to minimise environmental, and social impacts associated with the proposed activities, and Woodside is seeking interest or comments you may have to inform Woodside's decision making.

Joint Venture

Woodside is the Operator on behalf of the Macedon Joint Venture Partners. The participants are Woodside Energy (Australia) Pty Ltd and Santos WA PVG Pty Ltd.

We welcome your feedback by 7 July 2023.

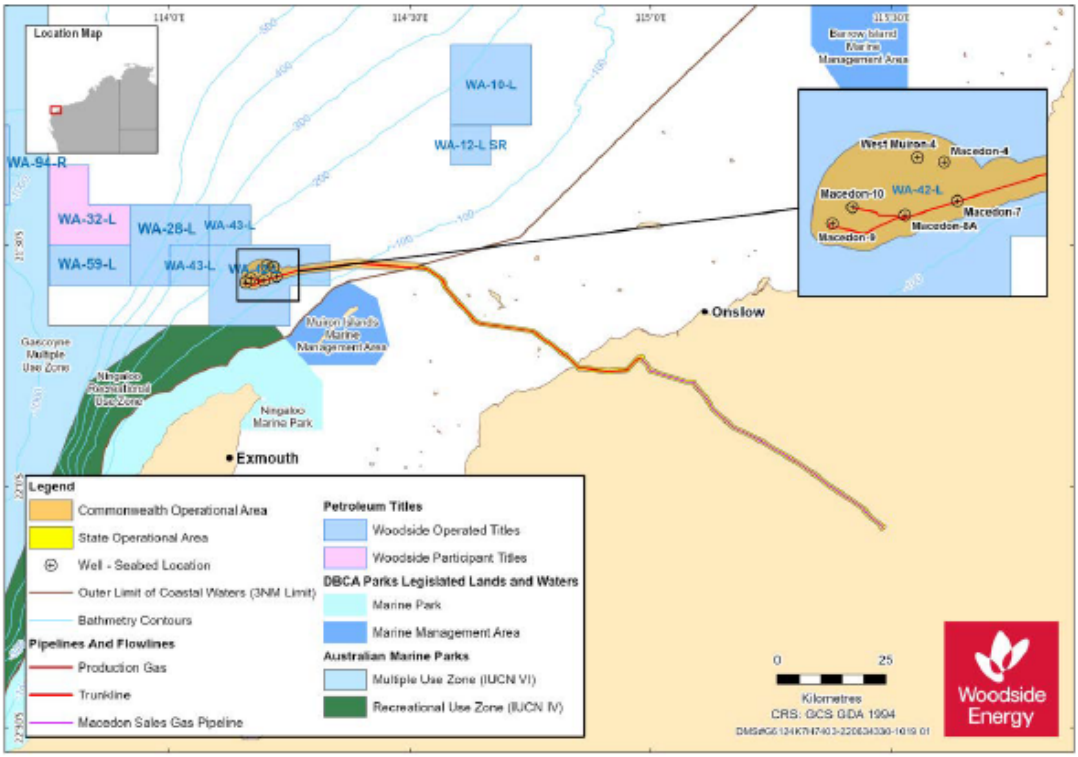


Figure 1: Macedon infrastructure and the two Operational Areas (Commonwealth and State)

Table 1. Activity Summary

Macedon Operations Commonwealth and State Environment Plans	

Summary	• Routine production
	• Routine inspection, monitoring, maintenance and repair (IMMR) activities of the:
	  • Four subsea wells and pipeline located in Commonwealth waters
	  • Non-producing wells in Commonwealth waters
	  • Wet Gas Pipeline located in State waters and onshore
	  • Dry Sales Gas Pipeline located onshore
	• Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines.
	• Non-routine and unplanned activities and incidents associated with the above
	• Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision.
	• Export of gas to other fields is included within the scope of the Commonwealth EP revision.

Permit Area	*Commonwealth:* • production licence area WA-42-L and pipeline licence WA-23-PL. *State:* • pipeline licences TPL/23, PL 88 (wet gas pipeline) and PL 87 (dry gas pipeline)
Approximate water depth	*Commonwealth:* • Wells: 160 to 180 m • Pipeline: State/Commonwealth waters boundary – 60 m *State:* • State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to - 40 m at the State waters boundary.
Commencement date	• Acceptance of five year environment plan.
Approximate estimated duration	• Next five years of operations
Infrastructure	• Four subsea production wells, with potential fifth well • Wet Gas and Dry Sales Gas Pipelines • Production manifold, flowlines and umbilicals and supporting subsea infrastructure • Two non-production wells with wellheads
Vessels/Vehicles	Commonwealth and State Marine areas: • Subsea support vessels State onshore: • Operational vehicles
Operational Areas and Exclusion zones	*Commonwealth Operational Area:* • Macedon subsea infrastructure and an area encompassing 1000 m around the infrastructure. • Non-production wells and an area of 500 m around each well. • An area encompassing 5000 m west, north and east of the Macedon manifold. *Commonwealth Exclusion Zones:* • Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. *State Operational Area:* • Offshore: Macedon pipeline and an area of 500 m either side of the pipeline and associated subsea infrastructure from the MLWM to the Commonwealth/State water boundary. • Onshore: Macedon pipeline easements/leases from the MLWM to the to the Macedon Gas Plant and from the Macedon Gas Plant to the tie in point of the Dampier to Bunbury Natural Gas Pipeline. *State Exclusion Zones:* • None.

Macedon Operations Commonwealth and State Environment Plans	
Distance to nearest town	*Commonwealth wells:* • ~40 km north of Exmouth and 100 km west of Onslow *Macedon Gas Plant:* • ~17 km south west of Onslow
Distance to nearest marine park/nature reserve	*Commonwealth:* • Ningaloo Multiple Use Zone ~10 km south-west of the Operational Area boundary • Muiron Islands Marine Management Area ~2.8 km west of Operational Area boundary *State:* • Ningaloo Marine Park ~33 km south west of the Operational Area boundary • Muiron Islands Marine Management Area ~8 km south west of the Operational Area boundary • Round Island and Locker Island Nature Reserves ~1.5 km north east of the Operational Area boundary

Table 2. Approximate Locations

Activity	Water Depth (m)	Latitude	Longitude	Exclusion Zone	Permit Area
Production Wells					
Macedon 7	92	21° 33' 50.797"	114° 13' 24.173"	Yes	WA-42-L
Macedon 8A	169	21° 34' 17.460"	114° 11' 47.008"	Yes	WA-42-L
Macedon 9	160	21° 34' 33.191"	114° 09' 31.101"	Yes	WA-42-L
Macedon 10	159	21° 34' 02.297"	114° 10' 08.567"	Yes	WA-42-L
Non Producing Wells					
Macedon 4	179	21° 32' 38.114"	114° 13' 00.140"	No	WA-42-L
West Muiron 4	183	21° 32' 29.713"	114° 12' 10.561"	No	WA-42-L
Production Infrastructure					
Macedon Wet Gas Pipeline (Cth) Start Point - Manifold	166	21° 34' 22.33"	114° 11' 47.22"	Yes	WA-23-PL
Cth/State waters boundary	60	21° 32' 40.73"	114° 30' 31.62"	No	
Macedon Wet Gas Pipeline (State) Cth/State waters boundary	60	21° 32' 40.73"	114° 30' 31.62"	No	TPL/23
MLWM* connection with Macedon Onshore Wet Gas Pipeline	onshore	21° 44' 53.76"	114° 50' 44.40"	No	
Macedon Wet Gas Pipeline MLWM* connection with Macedon Onshore Wet Gas Pipeline	onshore	21° 44' 53.76"	114° 50' 44.40"	No	PL 88
Launcher/receiver at the Macedon Gas Plant		21° 43' 54.92"	114° 58' 46.91"		
Sales gas pipeline Pig launcher/receiver at the Macedon Gas Plant	onshore	21° 44' 0.19"	114° 58' 52.67"	No	PL 87
Tie in point at the DBNGP^		22° 05' 4.84"	115° 28' 48.52"		

* MLWM – Mean Low Water Mark

^ DBNGP – Dampier to Bunbury Natural Gas Pipeline

Environment That May Be Affected (EMBA)

The environment that may be affected (EMBA) is the largest spatial extent where the Macedon Operations Petroleum Activities Program (PAP) could potentially have an environmental consequence (direct or indirect impact). For these EPs the broadest extent of the EMBA takes into consideration planned and unplanned activities, and is determined by a highly unlikely release of marine diesel to the environment as a result of a vessel collision. This is depicted in **Figure 2**.

The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

For these EPs Woodside has defined the EMBA by combining the potential spatial extent of surface and in-water (dissolved and entrained) hydrocarbons, resulting from a worst-case credible spill from a vessel collision. There are two EMBAs, one for each EP. As the reservoirs contain only trace liquid hydrocarbons, this means there is no credible risk of hydrocarbon spill due to well loss of integrity and only from fuel release from a vessel collision.

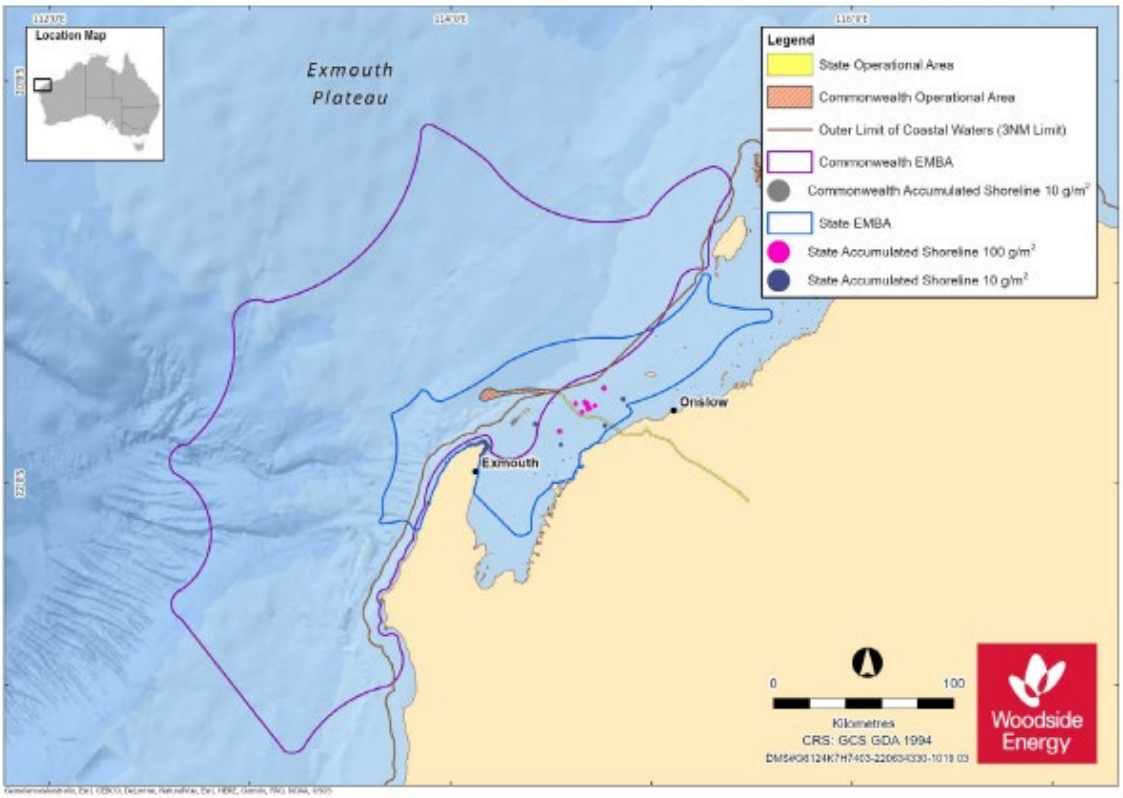


Figure 2 Environment that May Be Affected by the Macedon Operations Petroleum Activities Program

Mitigation and Management Measures

Woodside has undertaken an assessment to identify potential impacts and risks to the marine and terrestrial environment arising from the proposed Macedon Operations activities considering timing, duration, and location.

A number of mitigation and management measures for Macedon activities are outlined in **Table 3**. Further details will be provided in the two EPs.

Table 3. Summary of key risks and/or impacts and management measures for the proposed Macedon Operations activities

Potential Risk and/ or Impact	Description of Source of Potential Impact/Risk	Description of Potential Impacts	Preliminary Draft Mitigation and/or Management Measure
Planned			
Physical presence: interactions with other marine users	• Subsea support vessels will be required to complete inspection, monitor maintenance and repair (IMMR) activities. • The physical presence and movement of subsea support vessels within the Operational Area has the potential to interact other marine users. • The presence of subsea infrastructure also has the potential to interact with other marine users.	• Other marine user vessels in the Operational Area, which may include commercial fishing, shipping, tourism, recreation and defence, may experience temporary and localised displacement during the IMMR activity. • The physical presence of the subsea infrastructure has the potential to interact with other marine users such as commercial fishing where fishing methods are at or near the seabed.	• Subsea support vessels adhere to the regulatory requirements for navigational safety. • Maintain a 500 m safety exclusion zone around wells and some subsea infrastructure, which is communicated to marine users. • Notify the Australian Hydrographic Office (AHO) prior to commencement of the activity where subsea support vessel(s) will be in Operational Area (but outside the safety exclusion zone) >3 weeks to enable them to update maritime charts ensuring marine users are aware of the activity. • Consult with relevant persons so they are informed of the proposed activities.
Physical presence: seabed disturbance	Seabed disturbance may result from: • Equipment laydown. • Movement of a Remotely Operated Vehicle (ROV) near the seabed. • Addition of stabilisation aids or scour protection.	• Equipment laydown, ROV operations and addition of stabilization aids or scour protection may result in highly localised physical disturbance of the seabed.	• Subsea support vessels will not anchor unless in an emergency. • Impacts to cultural heritage areas or prospective areas to be avoided and/ or mitigated in accordance with Woodside's First Nations Communities Policy.
Routine acoustic emissions	• Subsea support vessels will generate noise in the air and underwater due to the operation of thruster engines, propellers, and on-board machinery etc. • Underwater noise may also be generated by IMMR equipment for example ROVs.	• Localised elevated underwater noise may affect marine fauna including marine mammals (cetaceans), turtles and fish.	• Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions. • Implement EPBC guidance for turtles and whale sharks.
Routine and non-routine discharges: Subsea support vessels	• Sewage, greywater, and putrescible waste may be discharged from subsea support vessels. • Bilge water, deck drainage and brine and cooling water may also be discharged.	• Short-term, localised impacts to water quality i.e. eutrophication from the addition of nutrients from these discharge fluids.	• Routine marine discharges will be managed according to legislative and regulatory requirements. Chemicals that may be discharged, e.g. deck wash, will be selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.
Routine and non-routine discharges: operational activities	• Chemical use may be required to remove marine growth. • Chemicals or residual hydrocarbons (following flushing) remaining in subsea infrastructure may be required to be released as part of IMMR activities.	• Localised reduction in water quality in the immediate vicinity of the release location.	• Chemicals intended or likely to be discharged into the marine environment reduced to ALARP using Woodside's chemical assessment process. • Flush subsea infrastructure prior to repair/replacement.

Potential Risk and/ or Impact	Description of Source of Potential Impact/Risk	Description of Potential Impacts	Preliminary Draft Mitigation and/or Management Measure
Atmospheric emissions	• Atmospheric emissions will be generated by the subsea support vessels, vehicles onshore and helicopters from internal combustion engines and incineration activities.	• Emissions from subsea support vessels, vehicles onshore and helicopters could result in temporary, localised reductions in air quality in the immediate vicinity.	• Comply with legislative and regulatory requirements for marine air pollution and emissions reporting. • Manage vessel speed to reduce fuel combustion where practicable.
Light emissions	• Subsea support vessels will use external lighting to navigate and conduct safe operations at night. • Vessel lighting will also be used to communicate the vessel's presence to other marine users (i.e. navigation/ warning lights)	• Light emissions have the potential to affect fauna such as marine turtles and birds by influencing changes in their behaviour or impacting orientation.	• Compliance with Macedon's Ministerial Conditions for managing light impacts. • Lighting limited to the minimum required for navigational and safety requirements, with the exception of emergency events in the offshore environment. • Implementation of the Woodside Seabird Management Plan. • Subsea support vessel activities being undertaken in state waters to undertake an additional light impact assessment. • Vehicle operations onshore will be undertaken only during daylight hours.
Unplanned			

Unplanned hydrocarbon release: vessel collision	• Project vessels will use marine diesel fuel, meaning a vessel collision involving a project vessel or third-party during the activity may potentially result in the release of marine diesel.
	• For a collision to result in the worst-case scenario diesel release, several factors must occur as follows:
	  • Identified causes of vessel interaction must result in a collision
	  • The collision has enough force to penetrate the vessel hull and in the exact location of the fuel tank
	  • The fuel tank must be full or at least of volume which is higher than the point of penetration.
		• In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur.
		• Modelling of a surface release of marine diesel within the Operational Areas (State and Commonwealth) were used to understand potential locations and impacts.
			Preventing vessel collision:
			• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.
			• Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision.
			• Notify the AHO prior to commencement of the activity where subsea support vessel(s) will be in Operational Area (but outside the safety exclusion zone) for >3 weeks to enable them to update maritime charts ensuring marine users are aware of the activity.
			• Simultaneous Operations (SIMOPS) plans in place if more than one Subsea support vessel is required.
			
			Spill response arrangements:
			• Maintain the Macedon specific Oil Pollution Emergency Plan documents (OPEPs) including first strike response plans for both the State and Commonwealth activities.
			• Arrangements supporting OPEPs will be tested to ensure the OPEPs can be implemented as planned.
			• Emergency response activities would be implemented in line with the OPEPs.

Potential Risk and/ or Impact	Description of Source of Potential Impact/Risk	Description of Potential Impacts	Preliminary Draft Mitigation and/or Management Measure
Unplanned hydrocarbon release: loss of well integrity	• Accidental loss of hydrocarbons to the marine environment due to loss of well control may occur, caused by failure of well barriers.	• Given hydrocarbons of the Macedon reservoir contain very little liquid fraction (predominantly natural gas), there is expected to be negligible liquid component in the event of a loss of well containment. This means there is only a minor hydrocarbon spill scenario in the event of a well blowout. • A loss of well control may temporarily decrease the water quality in the immediate vicinity of the release.	**Preventing loss of well control** • Wells managed in compliance with the accepted Well Operations Management Plan (WOMP). **Spill response arrangements:** • Maintain the Source Control Emergency Response Plan • Maintain the Macedon specific OPEPs including first strike response plans for both the State and Commonwealth activities. • Arrangements supporting the OPEPs continue to be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.
Unplanned discharge: deck and subsea spills	• Accidental discharge to the ocean of hydrocarbons/ chemicals from Subsea support vessels deck activities and equipment.	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (<100 L) would be expected to potentially occur, resulting in very short-term impacts to water quality, and limited to the immediate release location. • No significant impacts from the accidental discharges described would be anticipated due to the low volumes, offshore/open water locations, and high level of dilution into the open water marine environment of the Operational Areas.	• Comply with regulatory requirements for the prevention of marine pollution • Chemicals will be selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily. • Spill kits positioned in high-risk locations around the vessel (near potential spill points such as transfer stations).
Unplanned discharge: hazardous and non-hazardous solid waste/equipment	• Accidental, unplanned loss of hazardous or non-hazardous solid wastes/equipment to the marine environment may occur if dropped or blown overboard.	• The potential impacts of hazardous or non-hazardous solid wastes and equipment accidentally discharged to the marine environment include contamination of the environment as well as secondary impacts relating to potential contact of marine fauna with wastes. • The temporary or permanent loss of waste materials/equipment into the marine environment is not likely to have a significant environmental impact, based on the location of the activity, the types, size and frequency of wastes that could occur, and species present.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes. • Implement Waste Management Plan. • Solid waste/equipment dropped to the marine environment will be recovered where safe and practicable to do so.

Potential Risk and/ or Impact	Description of Source of Potential Impact/Risk	Description of Potential Impacts	Preliminary Draft Mitigation and/or Management Measure
Physical presence: vessel collision with marine fauna	• Accidental collision between subsea support vessel and protected marine fauna. • 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) and the type of animal potentially present and their behaviours.	• Vessel movements have the potential to result in accidental collisions between the vessel (hull and propellers) and marine fauna. • The risk of vessel collision with marine mammals is present year-round but is seasonally elevated for species such as pygmy blue whales during migration periods and within migration Biologically Important Areas (BIAs). Given the short duration of planned vessel activities within the Operational Areas, and the slow speeds at which subsea support vessels operate, collisions with cetaceans are considered highly unlikely.	• Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring. • Implement EPBC guidance for turtles and whale sharks.
Physical presence: vehicle collision with terrestrial fauna	• Accidental collision between vehicle and protected terrestrial fauna. • The factors that contribute to the frequency and severity of impacts vary due to vehicle type, operation (specific activity, speed), physical environment (e.g. weather conditions) and the type of animal potentially present and their behaviours.	• Vehicle movements have the potential to result in accidental collisions with terrestrial fauna. • The risk of collision with terrestrial is present year-round but is seasonally elevated for species during breeding periods and within BIAs. Given the short duration of planned onshore activities within the Operational Areas, and the slow speeds at which vehicles operate, collisions with terrestrial are considered highly unlikely.	• Vehicle operations onshore will be undertaken only during daylight hours
Physical presence: seabed disturbance from dropped objects	• Accidental objects dropped from subsea support vessels may result in seabed disturbance. • Accidental loss of significant IMMR equipment.	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities.	• Dropped objects to be recovered and relocated where safe and practicable to do so. • Apply safe work procedures to prevent dropped objects from vessels and during deployment and retrieval of equipment.
Physical presence: accidental introduction and establishment of invasive marine species (IMS)	• Vessels transiting to the Operational Areas may be subject to marine fouling whereby organisms attach to the vessel hull. • Organisms may also be drawn into ballast tanks during onboarding of ballast water. • Submersible equipment may be subject to marine fouling (potentially from outside region/ Australian waters).	• The deeper offshore open waters of the Operational Areas (>50 m) are not conducive to the settlement and establishment of IMS. • There are shallower waters in the State Operational Area that may present an increased risk of IMS establishment. • Given the existing Woodside and legislative controls in place, that minimise the introduction of IMS, it is considered that the likelihood for IMS to become established is remote.	• Ballast water and biofouling will be managed according to regulatory requirements, including the Australian Ballast Water Management Requirements, and the Australian Biofouling Management Requirements (international vessels), as applicable. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment entering the Operational Area.

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities in the region.

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before 7 July 2023 via:

E: Feedback@woodside.com.au
Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:
www.woodside.com/sustainability/consultation-activities.

For the Commonwealth Operations, please note that your feedback and our response will be included in our Environment Plan for the proposed activities, which will be submitted to the National Offshore Petroleum Safety and Environment Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

For the State operations, please note that your feedback and our response will be included in our Environment Plan for the proposed activities, which will be submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA) and the Petroleum Pipelines (Environment) Regulations 2012 (WA)*.

Please let us know if your feedback for Macedon Operations is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the EP in order for this information to remain confidential to NOPSEMA or DMIRS.

Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.

1.34 Newspaper Ads (7 June 2023)

Midwest Times

24 MIDWEST TIMES midwesttimes.com.au WEDNESDAY, JUNE 7, 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy (Australia) Pty Ltd (ACN 006 923 870) is proposing to conduct activities in State and Commonwealth waters as described below:

Macedon Operations Commonwealth and State Environment Plans (EPs) (Macedon Joint Venture)

Activity summary:	The EPs for Macedon Operations activities in Commonwealth and State waters are being revised in accordance with the five-yearly Operations EP review cycle. The continuation of Macedon operations activities includes routine production and operations and the routine inspection, monitoring, maintenance and repair activities associated with: • four subsea wells with potential for a fifth subsea well (located in Commonwealth waters); • two non-producing wells with wellheads (located in Commonwealth waters); • section of Wet Gas Pipeline located in Commonwealth waters; • section of Wet Gas Pipeline located in State waters and onshore; • Dry Sales Gas Pipeline located onshore. Routine operational activities also include the rehabilitation and remediation of the onshore wet and dry gas pipelines. The EP also considers non-routine and unplanned activities and incidents associated with the above activities.
Location:	The Macedon gas field is located in Commonwealth waters approximately 60 km north of Exmouth and approximately 100 km west of Onslow. The Macedon Gas Plant is located onshore approximately 17 km south west of Onslow in the Pilbara region of WA. A pipeline transports gas from the field to the gas plant and from the gas plant into the Dampier to Bunbury Pipeline.
Commencement timing:	Following acceptance of EP
Estimated duration:	Five years of operations following EP acceptance

Woodside Energy Ltd (ACN 005 482 986) is proposing to conduct activities in Commonwealth waters as described below:

Angel Facility Operations Environment Plan (NWS Joint Venture)

Activity summary:	The EP is being revised to integrate drilling, subsea installation, commissioning and planned production from the Lambert West tie-back into the Angel production systems via the existing Lambert Deep subsea infrastructure. Aside from the production changes associated with Lambert West, the routine operational aspects of the EP remain the same as the existing EP and proposes to extend to the Lambert West tie-back. This includes routine production and operations and the routine inspection, monitoring, maintenance and repair activities of subsea infrastructure including a number of exploration wells not linked to the production systems.
Location:	Approximately 125 km north-west of Karratha
Commencement timing:	*Angel Operations:* Production at the Angel facility commenced in 2008 and is ongoing. *Lambert West Drilling and tie-back:* Drilling activities described in the EP are anticipated to commence around Q3 2024, subsea installation in Q4 2024, and commissioning activities in H1 2025 pending approvals, vessel availability and weather constraints.
Estimated duration:	*Angel Operations:* Five years of operations following EP acceptance *Lambert West Drilling and tie-back:* Approximately 60 days for drilling operations for the Lambert West well. Activities are planned to take place 24 hours, 7 days a week. Subsea installation activities are likely to take approximately four weeks.

Figure 1 and **Figure 2** illustrate the Operational Areas and the Environment That May Be Affected (EMBA) for Macedon and Angel, respectively. Prediction of each EMBA is based on modelling of a composite of many different petroleum spill cases where a highly unlikely, unplanned oil spill event could travel, based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks and impacts identified and will be outlined in the relevant EP.

Impacts associated with Macedon Operations planned activities include the physical presence of marine vessels, vessel interaction with other marine users, seabed disturbance (such as survey equipment), noise, light, air emissions, marine discharges, and onshore rehabilitation and remediation. Impacts that could occur due to an unplanned event include hydrocarbon releases (marine diesel), vessel collisions with marine fauna, additional seabed disturbance, invasive marine species, accidental loss of waste or other discharges.

Impacts associated with the Angel Operations planned activities include the physical presence of operational vessels, interaction with other marine users, seabed disturbance (such as survey equipment), noise, light, air emissions and marine discharges. Impacts directly associated with the drilling and tie-back activities include physical presence of Mobile Offshore Drilling Unit (MODU) and project support vessels, seabed disturbance (such as infrastructure placement), drilling and commissioning impacts (such as noise, light, air emissions and marine discharges). Impacts that could occur due to an unplanned event include hydrocarbon releases (condensates or marine diesel), vessel collisions with marine fauna, additional seabed disturbance, invasive marine species, accidental loss of waste or other discharges.

Figure 1 and **Figure 2** illustrate an indicative EMBA for Macedon Operations and Angel Operations, respectively, to support persons or organisations understanding of whether their functions, interests or activities may be affected by the proposed activities, with detailed information found in Woodside's Consultation Information Sheets.

Figure 1 The indicative EMBA associated with Macedon Commonwealth and State Operations Environment Plans

Figure 2 The indicative EMBA associated with Angel Facility Operations Environment Plan

Consultation Participation and Feedback

Woodside is seeking to consult relevant persons to inform Woodside's preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the development of each EP in accordance with environmental regulations administered by the Commonwealth regulator National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) and State regulator Department of Mines, Industry, Regulation and Safety (DMIRS) in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012* (WA), and the *Petroleum Pipelines (Environment) Regulations 2012* (WA) and support other regulatory submissions associated with the planned activities.

Detailed consultation information sheets are available at:
www.woodside.com/sustainability/consultation-activities
You can also subscribe via our website to receive future information on proposed activities.

Macedon Operations Commonwealth and State Environment Plans

NOPSEMA has published a brochure entitled Consultation on offshore petroleum environment plans – Information for the Community, to help community members who may be relevant persons understand the consultation requirements and how to effectively participate in consultation, which is available at: www.nopsema.gov.a

If you would like to comment on the proposed activities outlined above, plea contact Woodside before **7 July 2023** via:
E: **Feedback@woodside.com**
Toll free: **1800 442 977**

NorthWest Telegraph

Classifieds

PUBLIC NOTICES

Shire of EAST Pilbara
THE HEART OF THE PILBARA

Notice of 2021/22 General Meeting of Electors

7 June 2023

Notice is hereby given that the 2021/22 Annual Meeting of Electors of the Shire of East Pilbara will be held on Friday, 30 June 2023 commencing at 10.30 am at the Newman Council Chambers, corner Kalgan and Newman Drives, Newman.

The purpose of the General Electors' Meeting is to discuss the contents of the annual report for the 2021/22 financial year and then any other general business.

The agenda for the Annual Meeting of Electors will be available to the public prior to the date of the meeting at the Shire's website: **www.eastpilbara.wa.gov.au.**

All members of the community are invited to attend and participate in the Shire's 2021/22 General Meeting of Electors.

For further information, please contact 08 9175 8000.

Steven Harding
Chief Executive Officer

Town of Port Hedland

Town of Port Hedland Rating Strategy 2023/24

The Town of Port Hedland gives notice to ratepayers that it has endorsed the rating strategy for 2023/24, encompassing the below proposed differential rates and minimum payments.

Ratepayers and electors are invited to view the 2023/24 Statement of Objects and Reasons for the proposed rating changes on the Town of Port Hedland website, or at the Town of Port Hedland Civic Centre, McGregor Street, Port Hedland.

Submissions are invited prior to 5:00pm 20 June 2023. Submissions should be addressed to the Chief Executive Officer, Town of Port Hedland, PO Box 41 Port Hedland WA 6721 and be clearly marked Submission - Rating Strategy 2023/24. Alternatively, submissions can be emailed to council@porthedland.wa.gov.au

Rate Category	2022/23 Current Rate in the Dollar	2023/24 Proposed Rate in the Dollar	2023/24 Proposed Minimums	2023/2024 Share Percentage of Revenue
	$	$	$	$
GRV Residential	[illegible]	[illegible]	1000	[illegible]
GRV Commercial/Industrial	[illegible]	[illegible]	[illegible]	[illegible]
GRV Accommodation	[illegible]	[illegible]	[illegible]	[illegible]
UV Pastoral	[illegible]	[illegible]	[illegible]	[illegible]
UV Mining	[illegible]	[illegible]	200	[illegible]
UV Other	N/A	[illegible]	[illegible]	[illegible]

Please note: The public notice in the 24th May edition of the North West Telegraph was incorrect.

Town of Port Hedland

Town of Port Hedland
Local Government Act 1995,
Section 3.58
Disposal of Property

The Town of Port Hedland Council is proposing to dispose of the following property by way of sale to the following party in accordance with section 3.58 (3) of the Local Government Act 1995 (private treaty) on the following terms and conditions:

Lot Number	Prospective Purchaser	Offer To Purchase	Valuation
Lot 2939 Roberts Street, South Hedland, WA, 6722 and Lot 5977 Hamilton Road, South Hedland, WA, 6722	Turner River Developments Pty Ltd	$980,000.00 ex GST	$890,000.00 ex GST

Submissions are invited for Council consideration on the proposed disposal. Submissions are to be received by email to **eplanning@porthedland.wa.gov.au** or post addressed to:
Chief Executive Officer, PO Box 41, Port Hedland WA 6721 before close of business **Wednesday, 14 June 2023.**

Carl Askew
Chief Executive Officer

Shire of EAST Pilbara
THE HEART OF THE PILBARA

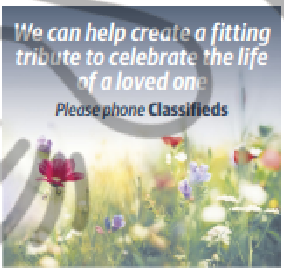
Notice of 2021/22 Annual Report Available to the Public

7 June 2023

Pursuant to section 5.55 of the Local Government Act 1995, local public notice is hereby given that the Shire of East Pilbara 2021/22 Annual Report has been accepted by the Council and is available to access by the public at the Shire's website: **www.eastpilbara.wa.gov.au** and Shire Offices in Newman and Marble Bar.

For further information, please contact 08 9175 8000.

Steven Harding
Chief Executive Officer



ENVIRONMENT PLANS NOTICE

Woodside Energy (Australia) Pty Ltd (ACN 006 923 879) is proposing to conduct activities in State and Commonwealth waters as described below:

Macedon Operations Commonwealth and State Environment Plans (EPs) (Macedon Joint Venture)

Activity summary:	The EPs for Macedon Operations activities in Commonwealth and State waters are being revised in accordance with the five-yearly Operations EP review cycle. The continuation of Macedon operations activities includes routine production and operations and the routine inspection, monitoring, maintenance and repair activities associated with: • four subsea wells with potential for a fifth subsea well (located in Commonwealth waters); • two non-producing wells with wellheads (located in Commonwealth waters); • section of Wet Gas Pipeline located in Commonwealth waters; • section of Wet Gas Pipeline located in State waters and onshore; • Dry Sales Gas Pipeline located onshore. Routine operational activities also include the rehabilitation and remediation of the onshore wet and dry gas pipelines. The EP also considers non-routine and unplanned activities and incidents associated with the above activities.
Location:	The Macedon gas field is located in Commonwealth waters approximately 40 km north of Exmouth and approximately 100 km west of Onslow. The Macedon Gas Plant is located onshore approximately 17 km south west of Onslow in the Pilbara region of WA. A pipeline transports gas from the field to the gas plant and from the gas plant into the Dampier to Bunbury Pipeline.
Commencement timing:	Following acceptance of EP.
Estimated duration:	Five years of operations following EP acceptance

Woodside Energy Ltd (ACN 005 482 986) is proposing to conduct activities in Commonwealth waters as described below:

Angel Facility Operations Environment Plan (NWS Joint Venture)

Activity summary:	The EP is being revised to integrate drilling, subsea installation, commissioning and planned production from the Lambert West tie-back into the Angel production systems via the existing Lambert Deep subsea infrastructure. Aside from the production changes associated with Lambert West, the routine operational aspects of the EP remain the same as the existing EP and proposes to extend to the Lambert West tie-back. This includes routine production and operations and the routine inspection, monitoring, maintenance and repair activities of subsea infrastructure including a number of exploration wells not linked to the production systems.
Location:	Approximately 125 km north-west of Karratha
Commencement timing:	*Angel Operations:* Production at the Angel facility commenced in 2008 and is ongoing. *Lambert West Drilling and tie-back:* Drilling activities described in the EP are anticipated to commence around Q3 2024, subsea installation in Q4 2024 and commissioning activities in H1 2025 pending approvals, vessel availability and weather constraints.
Estimated duration:	*Angel Operations:* Five years of operations following EP acceptance *Lambert West Drilling and tie-back:* Approximately 60 days for drilling operations for the Lambert West well. Activities are planned to take place 24 hours, 7 days a week. Subsea installation activities are likely to take approximately four weeks.

Figure 1 and **Figure 2** illustrate the Operational Areas and the Environment That May Be Affected (EMBA) for Macedon and Angel, respectively. Prediction of each EMBA is based on modelling of a composite of many different paths and furthest distance where a highly unlikely, unplanned oil spill event could travel, based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks and impacts identified and will be outlined in the relevant EP.

Impacts associated with Macedon Operations planned activities include the physical presence of marine vessels, vehicles, interaction with other marine users, seabed disturbance (such as survey equipment), noise, light, air emissions, marine discharges and onshore rehabilitation and remediation. Impacts that could occur due to an unplanned event include hydrocarbon releases (marine diesel), vessel collisions with marine fauna, additional seabed disturbance, invasive marine species, accidental loss of waste or other discharges.

Impacts associated with the Angel Operations planned activities include the physical presence of operational vessels, interaction with other marine users, seabed disturbance (such as survey equipment), noise, light, air emissions and marine discharges. Impacts directly associated with the drilling and tie-back activities include physical presence of Mobile Offshore Drilling Unit (MODU) and project support vessels, seabed disturbance (such as infrastructure placement), drilling and construction impacts (such as noise, light, air emissions and marine discharges). Impacts that could occur due to an unplanned event include hydrocarbon releases (condensates or marine diesel), vessel collisions with marine fauna, additional seabed disturbance, invasive marine species, accidental loss of waste or other discharges.

Figure 1 and **Figure 2** illustrate an indicative EMBA for Macedon Operations and Angel Operations, respectively, to support persons or organisations understanding of whether their functions, interests or activities may be affected by the proposed activities, with detailed information found in Woodside's Consultation Information Sheets.

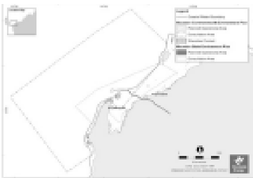


Figure 1 The indicative EMBA associated with Macedon Commonwealth and State Operations Environment Plans

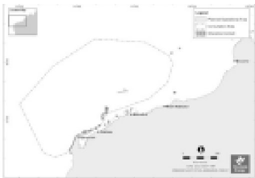


Figure 2 The indicative EMBA associated with Angel Facility Operations Environment Plan

Consultation Participation and Feedback

Woodside is seeking to consult relevant persons to inform Woodside's preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the development of each EP in accordance with environmental regulations administered by the Commonwealth regulator National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) and State regulator Department of Mines, Industry, Regulation and Safety (DMIRS) in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012* (WA), and the *Petroleum Pipelines (Environment) Regulations 2012* (WA) and support other regulatory submissions associated with the planned activities.

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... ve, please

Macedon Operations Commonwealth and State Environment Plans

Angel Facility Operations Environment Plan

Pilbara News

Classifieds

9482 2300 Place an ad: regionalclassifieds@wanews.com.au or go to pilbaranews.com.au

PUBLIC NOTICES

Shire of Ashburton Proposal to Dispose of Property – Lease:

Portion Of Lot 550 on DP 414367 Onslow Road, Onslow

Disposal under section 3.58 of the Local Government Act 1995 (WA)

Notice is hereby given that the Shire of Ashburton proposes to dispose of a portion of property as follows:

- Lessee: C.D. Dodd Scrap Metal Recyclers T/A Dodd Group Pty Ltd
- Property: 4 ha (approximate) portion of Lot 550 on DP 414367 Onslow Road, Onslow (Pilbara Regional Waste Management Facility)
- Term: Seven (7) years commencing on the execution of the Lease, plus two options of five (5) years
- Rental: $100,000 + GST per annum
- Market Valuation: $101,500 + GST per annum

Written public submissions are invited on the proposed disposition and should be addressed to:

Chief Executive Officer, Shire of Ashburton, PO Box 567, Tom Price, Western Australia 6751 or mail@ashburton.wa.gov.au by 4:00pm on Wednesday 21 June 2023.

Kenn Donohoe
Chief Executive Officer

www.ashburton.wa.gov.au

ENVIRONMENT PLANS NOTICE

Woodside Energy (Australia) Pty Ltd (ACN 006 923 879) is proposing to conduct activities in State and Commonwealth waters as described below:

Macedon Operations Commonwealth and State Environment Plans (EPs) (Macedon Joint Venture)

Activity summary:	The EPs for Macedon Operations activities in Commonwealth and State waters are being revised in accordance with the five-yearly Operations EP review cycle. The continuation of Macedon operations activities includes routine production and operations and the routine inspection, monitoring, maintenance and repair activities associated with: • four subsea wells with potential for a fifth subsea well (located in Commonwealth waters); • two non-producing wells with wellheads (located in Commonwealth waters); • section of Wet Gas Pipeline located in Commonwealth waters; • section of Wet Gas Pipeline located in State waters and onshore; • Dry Sales Gas Pipeline located onshore. Routine operational activities also include the rehabilitation and remediation of the onshore wet and dry gas pipelines. The EP also considers non-routine and unplanned activities and incidents associated with the above activities.
Location:	The Macedon gas field is located in Commonwealth waters approximately 40 km north of Exmouth and approximately 100 km west of Onslow. The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow in the Pilbara region of WA. A pipeline transports gas from the field to the gas plant and from the gas plant into the Dampier to Bunbury Pipeline.
Commencement timing:	Following acceptance of EP.
Estimated duration:	Five years of operations following EP acceptance.

Woodside Energy Ltd (ACN 005 482 986) is proposing to conduct activities in Commonwealth waters as described below:

Angel Facility Operations Environment Plan (NWS Joint Venture)

Activity summary:	The EP is being revised to integrate drilling, subsea installation, commissioning and planned production from the Lambert West tie-back into the Angel production systems via the existing Lambert Deep subsea infrastructure. Aside from the production changes associated with Lambert West, the routine operational aspects of the EP remain the same as the existing EP and proposed to include the Lambert West tie-back. This includes routine production and operations and the routine inspection, monitoring, maintenance and repair activities of subsea infrastructure (including a number of exploration wells not linked to the production system).
Location:	Approximately 125 km north-west of Karratha.
Commencement timing:	*Angel Operations:* Production at the Angel Facility commenced H1 2008 and is ongoing. *Lambert West Drilling and tie-back:* Drilling activities described in the EP are anticipated to commence around Q1 2024, subsea installation in Q4 2024 and commissioning activities in H1 2025 pending approvals, vessel availability and weather constraints.
Estimated duration:	*Angel Operations:* Five years of operations following EP acceptance. *Lambert West Drilling and tie-back:* Approximately 60 Sm³ for drilling operations for the Lambert West well. Activities are planned to take place 24 hours, 7 days a week. Subsea installation activities are likely to take approximately four weeks.

Figure 1 and **Figure 2** illustrate the Operational Areas and the Environment That May Be Affected (EMBA) for Macedon and Angel, respectively. Each EMBA is based on modelling of the opposite of many different paths and furthest distance where a highly unlikely, uncontrolled oil spill event could travel, based on weather and ocean conditions.

Woodside has undertaken risk assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Appropriate management measures have been developed for each of the risks and impacts identified and will be outlined in the relevant EP.

Impacts associated with Macedon Operations planned activities include the physical presence of marine vessels, vehicles, interaction with other marine users, seabed disturbance (such as survey equipment), noise, light, air emissions, marine discharges and commercial facilitation and remediation. Impacts that could occur due to an unplanned event include hydrocarbon releases (marine diesel), vessel collisions with marine fauna, additional seabed disturbance, invasive marine species, accidental loss of waste or other discharges.

Impacts associated with the Angel Operations planned activities include the physical presence of operational vessels, interaction with other marine users, seabed disturbance (such as survey equipment), noise, light, air emissions and marine discharges. Impacts directly associated with the drilling and tie-back activities include physical presence of Mobile Offshore Drilling Unit (MODU) and project support vessels, seabed disturbance (such as infrastructure placement), drilling and construction impacts (such as noise, light, air emissions and marine discharges). Impacts that could occur due to an unplanned event include hydrocarbon releases (condensates or marine diesel), vessel collisions with marine fauna, additional seabed disturbance, invasive marine species, accidental loss of waste or other discharges.

Figure 1 and **Figure 2** illustrate an indicative EMBA for Macedon Operations and Angel Operations, respectively, to support persons or organisations understanding of whether their functions, interests or activities may be affected by the proposed activities, with detailed information found in Woodside's Consultation Information Sheets.

Figure 1 The indicative EMBA associated with Macedon Commonwealth and State Operations Environment Plans

Figure 2 The indicative EMBA associated with Angel Facility Operations Environment Plan

Consultation Participation and Feedback

Woodside is seeking to consult relevant persons to inform Woodside's preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the development of each EP in accordance with environmental regulations administered by the Commonwealth regulator National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) and State regulator Department of Mines, Industry, Regulation and Safety (DMIRS) in accordance with the *Petroleum (Submerged Lands) (Environment) Regulations 2012* (WA), and the *Petroleum Pipelines (Environment) Regulations 2012* (WA) and support other regulatory submissions associated with the planned activities.

Detailed consultation information sheets are available at: **www.woodside.com/sustainability/consultation-activities**. You can also subscribe via our website to receive future information on proposed activities.

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Macedon Operations Commonwealth and State Environment Plans

Angel Facility Operations Environment Plan

The West Australian

THE WEST AUSTRALIAN CLASSIFIEDS

WEDNESDAY, JUNE 7, 2023 • 51

Local Govt. Tenders

Local Govt Vacancies

Local Govt. Notices

ENVIRONMENT PLANS NOTICE

Macedon Operations Commonwealth and State Environment Plans (EPs) (Macedon Joint Venture)

Angel Facility Operations Environment Plan (NWS Joint Venture)

Figure 1 The indicative EMBA associated with Macedon Commonwealth and State Operations Environment Plans

Figure 2 The indicative EMBA associated with Angel Facility Operations Environment Plan

Consultation Participation and Feedback

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PUBLIC NOTICES

Government of Western Australia
Department of Planning, Lands and Heritage

NOTICE OF INTENTION TO AMEND CLASS 'A' RESERVE 12439
BRAZIER ROAD YANCHEP – CITY OF WANNEROO
LAND ADMINISTRATION ACT 1997 (LAA)

I, Anthony Kannis, Director General, Department of Planning, Lands and Heritage under delegation of Minister for Lands, give notice pursuant to section 42(5) of the *Land Administration Act 1997* (LAA), that it is intended to act in relation to Class 'A' Reserve 12439.

It is proposed to excise a total of 780sqm of Class 'A' Reserve 12439, currently set aside for the purpose of 'Recreation' Act 43-1968' for subsequent amalgamation into adjoining Class 'C' Reserve 43792 for the purpose of 'Recreation'.

Excision of the abovementioned portion of reserve will rationalise existing boundaries to reflect existing land uses and the immediate surrounds.

Prior to proceeding with this action, you have the opportunity to provide comments on the proposal within 30 days of the publication of this notice. To enable your comments to be taken into account, or to arrange a viewing of the relevant plans, please contact Mahtab Nosrati via mahtab.nosrati@dplh.wa.

following reference numbers:

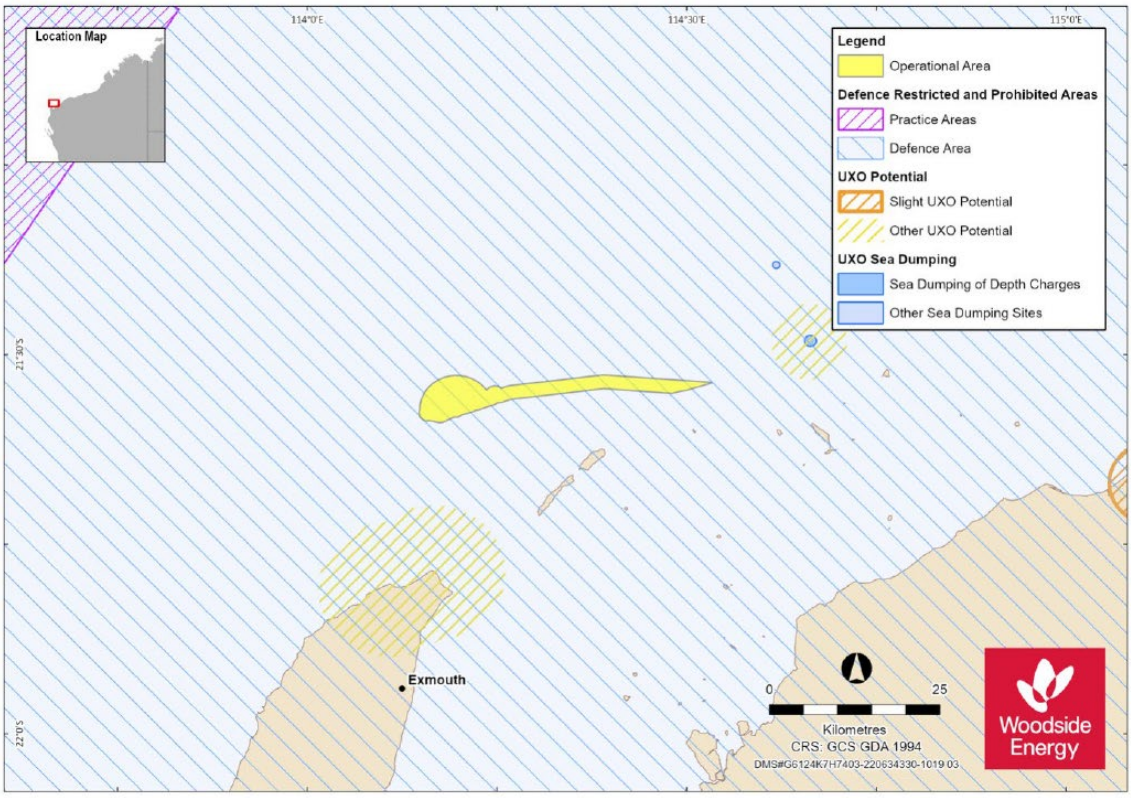
File No. 02286-1995

1.35 State shipwrecks sent to Department of Planning, Lands and Heritage and Western Australian Museum (DPLH) and Western Australian Museum (28 June 2023)

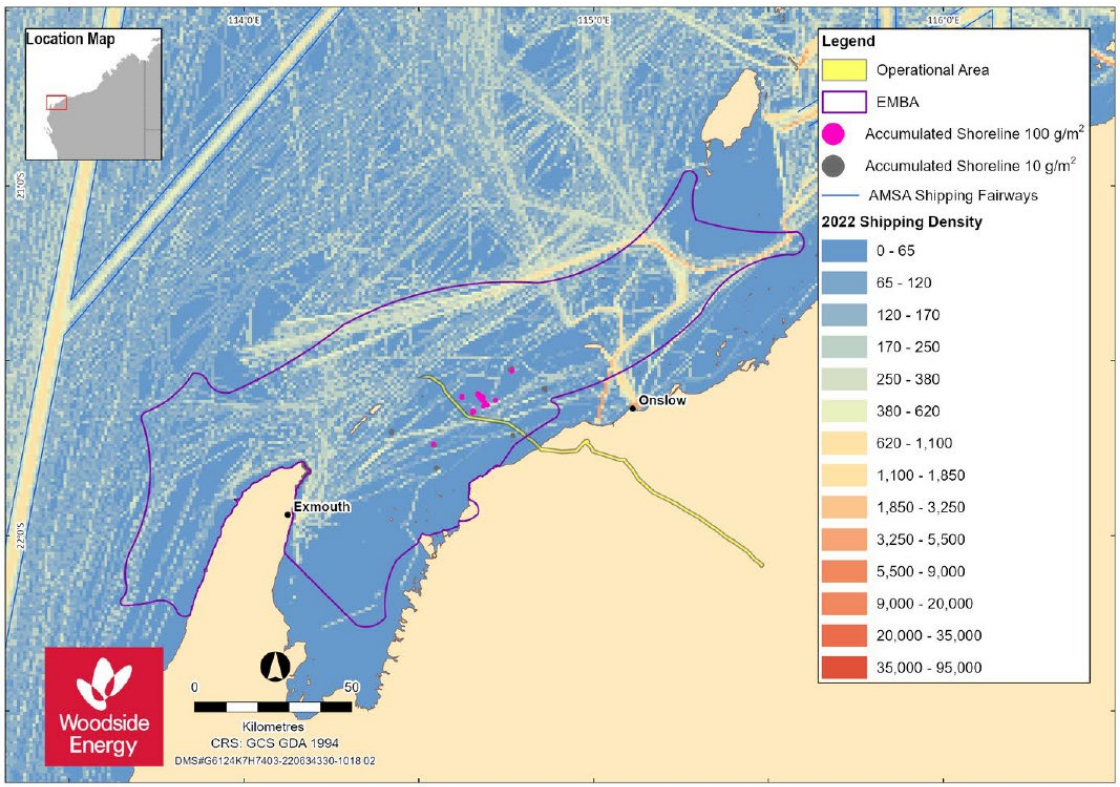
NAME	WHEN_LOST	WHERE_LOST	LONGITUDE	LATTUDE
Perth SS	1887/09/17	Point Cloates	-22.6942	113.6403
Stefano	1875/10/27	Point Cloates	-22.8288	113.7195
Zvir SS	27/11/1902	Point Cloates	-22.6092	113.626
Fin SS	15/02/1923	Point Cloates, Fraser Island	-22.6488	113.6268
Lady Ann	18/09/1982	24 miles north of NW Cape	-21.4	114.2

1.36 Defence zone map sent to Department of Defence (DoD) (28 June 2023)

Operational Area



1.37 Shipping lane map and GIS Shape File sent to AMSA and AHO (28 June 2023)



State - Macedon

1.38 Email sent to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) (28 June 2023)

Dear [Individual 18]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview

Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads

- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None

Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.39 Email sent to Wirrawandi Aboriginal Corporation (WAC) (20 June 2023)

Dear [Individual 19]

Further to [Individual 20]'s correspondence (18-May-23) with you regarding Woodside's Julimar Development Project Phase 3 (JDP3) wells and subsea infrastructure, please find attached information about two additional activities:

- Angel Facility Operations – Woodside is planning to revise and resubmit the Angel Facility Operations EP to integrate drilling, subsea installation commissioning and production from the Lambert West Field, located around 126 km north-north-west of Dampier.
- Macedon Operations – Woodside is submitting a five yearly revision of the Macedon Operations Commonwealth and State EPs in accordance with State and Commonwealth Regulations. The Macedon gas field is located approximately 40 km north of Exmouth and 100 km west of Onslow.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned activities and unplanned events. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the EPs.

I have attached summary information sheets that explain the activities we plan to undertake, and detailed consultation information sheets can be found at the links below:

- lambert-west.pdf (woodside.com)
- macedon.pdf (woodside.com)

Woodside is seeking to understand the nature of the interests that WAC and its members may have in the 'environment that may be affected' (EMBA) by these activities. The EMBA is the total area over which unplanned events could have environmental impacts. The EMBA is set out in the attached Summary Information Sheets and consultation information sheets. In particular, we are interested in hearing:

- how the activities could impact your interests and activities and/or your cultural values
- your concerns about the proposed activities and what you think we should do about those concerns
- whether there are any other individuals, groups, or organisations you think we should talk to.

If you would like to speak with us, please let us know by **21 July 2023** and please also advise of your preferred method of consultation. If there is any support or specific information that you require as part of our engagement, please let me know as soon as possible.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation. Please click on the italicised text above to access this document.

Please provide feedback directly to me on the details below, to Feedback@woodside.com.au, by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please also feel free to forward this email and the attached documents to WAC members and other people and organisations who you think may be interested as required. Woodside would be happy to speak with WAC members, the WAC Board and office holders and other interested parties.

We look forward to hearing from you.

As always, please be in contact if you require further information and if Woodside can assist WAC in any way to participate in these processes.

P.S. [Individual 20] is currently on leave and I am filling in for [Individual 20]

Regards

1.40 Email sent to Robe River Kuruma Aboriginal Corporation (20 June 2023)

Dear [Individual 21]

Further to [Individual 20]'s correspondence (18-May-23) with you regarding Woodside's Julimar Development Project Phase 3 (JDP3) wells and subsea infrastructure and the Goodwyn A Infill Geophysical and Geotechnical Surveys, please find attached information about two additional activities:

- Angel Facility Operations – Woodside is planning to revise and resubmit the Angel Facility Operations EP to integrate drilling, subsea installation commissioning and production from the Lambert West Field, located around 126 km north-north-west of Dampier.
- Macedon Operations – Woodside is submitting a five yearly revision of the Macedon Operations Commonwealth and State EPs in accordance with State and Commonwealth Regulations. The Macedon gas field is located approximately 40 km north of Exmouth and 100 km west of Onslow.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned activities and unplanned events. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the EPs.

I have attached summary information sheets that explain the activities we plan to undertake, and detailed consultation information sheets can be found at the links below:

- lambert-west.pdf (woodside.com)
- macedon.pdf (woodside.com)

Woodside is seeking to understand the nature of the interests that Robe River Kuruma Aboriginal Corporation (RRKAC) and its members may have in the 'environment that may be affected' (EMBA) by these activities. The EMBA is the total area over which unplanned events could have environmental impacts. The EMBA is set out in the attached Summary Information Sheets and consultation information sheets. In particular, we are interested in hearing:

- how the activities could impact your interests and activities and/or your cultural values
- your concerns about the proposed activities and what you think we should do about those concerns
- whether there are any other individuals, groups, or organisations you think we should talk to.

If you would like to speak with us, please let us know by **21 July 2023** and please also advise of your preferred method of consultation. If there is any support or specific information that you require as part of our engagement, please let me know as soon as possible.

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Feedback@woodside.com.au, by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please also feel free to forward this email and the attached documents to RRKAC members and other people and organisations who you think may be interested as required. Woodside would be happy to speak with RRKAC members, the RRKAC Board and office holders and other interested parties.

We look forward to hearing from you.

As always, please be in contact if you require further information and if Woodside can assist RRKAC in any way to participate in these processes.

P.S. [Individual 20] is currently on leave and I am filling in for [Individual 20]

Regards

1.41 Email sent to Shire of Exmouth (28 June 2023)

Dear [Individual 22]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

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Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
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Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also

include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads	Pipeline in State waters and onshore Umbilical in State waters and onshore

	Section of pipeline in Commonwealth waters	
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.42 Email to Shire of Carnarvon (28 June 2023)

Dear [Individual 23]

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.

	Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None

Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.43 Email sent Exmouth Community Liaison Group (28 June 2023)

Dear Exmouth Community Liaison Group

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

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Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

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If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines.

	Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	

Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.44 Email sent to Carnarvon Chamber of Commerce and Industry (28 June 2023)

Dear Carnarvon Chamber of Commerce and Industry

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western

Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:
- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	**State EP**
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the:	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located

	• Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and 100 km west of Onslow	*Macedon Gas Plant:* ~ 17 km south-west of Onslow
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	

Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:
If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

1.45 GIS Shape files sent to Chevron Australia, Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon (28 June 2023)

1.46 Email sent to Chevron Australia, Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA

Gorgon (28 June 2023)

Dear Chevron

Woodside is planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28**

July 2023.

Activity: Macedon Operations Commonwealth and State Environment Plans

	Commonwealth EP	State EP
Summary	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Four subsea wells and pipeline located in Commonwealth waters (with potential for fifth) • Two non-producing wells in Commonwealth waters Non-routine and unplanned activities and incidents associated with the above. Production from, IMMR activities for and routine and unplanned activities associated with a potential additional (new) production well are included in the scope of the Commonwealth EP revision. Export of gas to other fields is included within the scope of the Commonwealth EP revision.	Routine production Routine inspection, monitoring, maintenance and repair (IMMR) activities of the: • Wet Gas Pipeline located in State waters and onshore • Dry Sales Gas Pipeline located onshore Rehabilitation and remediation activities for the onshore Wet Gas and Dry Sales Gas Pipelines. Non-routine and unplanned activities and incidents associated with the above.
Production Licences	WA-42-L	None
Pipeline Licences	WA-23-PL	TPL/23 PL 88 PL 87
Location	*Commonwealth wells:* ~40 km north of Exmouth and	*Macedon Gas Plant:* ~ 17 km south-west of Onslow

	100 km west of Onslow	
Approx. Water Depth (m)	Wells: ~160 to 180 m Pipeline: State/Commonwealth waters boundary ~ 60 m	State waters pipeline: Mean Low Water Mark (MLWM) at the shore crossing to ~ 60 m at the State waters boundary
Schedule	Ongoing routine operations	
Approx. Estimated Duration	Next five years of operations.	
Exclusionary/ Cautionary Zone	Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field.	None
Infrastructure	Four subsea production wells, with potential fifth well Production manifold, flowlines and umbilicals and supporting subsea infrastructure Two non-production wells with wellheads Section of pipeline in Commonwealth waters	Pipeline in State waters and onshore Umbilical in State waters and onshore
Vessels/ Vehicles	Subsea support vessels	Subsea support vessels (State waters) Operational vehicles (onshore)

Feedback:

If you have feedback specific to the proposed activities described under the proposed EPs, we would welcome your feedback at: Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Your feedback and our response will be included in our Environment Plans 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 2009* (Cth) and to the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the

Pet*roleum (Submerged Lands) (Environment) Regulations 2012* (WA) and the *Petroleum Pipelines (Environment) Regulations 2012* (WA).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA and DMIRS upon submission of the Environment Plans in order for this information to remain confidential to NOPSEMA and DMIRS.

2. Additional Consultation

2.1 Email sent to Australian Border Force (ABF), Department of Industry, Science and Resources (DISR), Department of Transport (DoT), Australian Energy Producers (AEP – *formerly APPEA*), Department of Biodiversity, Conservation and Attractions (DBCA), Department of Mines, Industry Regulation and Safety (DMIRS), Protect Ningaloo (12 July 2023)

Dear Stakeholder

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and

risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.2 Email sent to Western Gas, Exxon Mobil Australia Resources Company, Shell Australia, Eni Australia, KUFPEC, Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG, OMV Australia, KATO Energy / KATO Corowa, INPEX Alpha, Energy Resources, Carnarvon Energy, Buru Energy, AGI Tubridgi, Allasso Energy (12 July 2023)

Dear Titleholder

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview

Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and

remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

2.3 Email sent to Australian Maritime Safety Authority (AMSA) – Marine Safety (12 July 2023)

Dear AMSA

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance,

and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **A shipping lane map is also attached.** You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.4 Email sent to Australian Maritime Safety Authority (AMSA) – Marine Pollution (12 July 2023)

Dear [Individual 3]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells

and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.5 Email sent to Australian Fisheries Management Authority (AFMA) (12 July 2023)

Dear AFMA

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the

Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.6 Email sent to Exmouth Gulf Prawn, Pilbara Trap Fishery and Pilbara Line Fishery (12 July 2023)

Dear Fishery Stakeholder

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP,

we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.7 Email sent to Western Australian Fishing Industry Council (WAFIC) (12 July 2023)

Dear [Individual 4] and [Individual 5]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in

the field for an extended period, and is outside the Petroleum Safety Zone.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

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 directly and consulting fisheries assessed as having a potential for interaction in the EMBA via WAFIC.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.8 Letter sent to Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2), Onslow Prawn Managed Fishery, Western Australian Sea Cucumber Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery (12 July 2023)

Dear Stakeholder

MACEDON OPERATIONS COMMONWEALTH AND STATE ENVIRONMENT PLAN

Woodside previously consulted you (correspondence dated 27 June 2023) regarding its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Woodside is writing to you to follow up on feedback with respect to the proposed activities. You were previously sent a Consultation Information Sheet (also available on our website woodside.com), which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

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 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Regards,

Woodside Feedback

2.9 Letter sent to Gascoyne Recreational Marine Users (12 July 2023)

Dear Stakeholder

MACEDON OPERATIONS COMMONWEALTH AND STATE ENVIRONMENT PLAN

Woodside previously consulted you (correspondence dated 27 June 2023) regarding its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Woodside is writing to you to follow up on feedback with respect to the proposed activities. You were previously sent a Consultation Information Sheet (also available on our website woodside.com), which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **27 July 2023**.

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 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Regards,
Woodside Feedback

SAMPLE LETTER

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: 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 July 2023

1
CIRKAM PTY LTD
C/- PO BOX 3229
BLUFF POINT WA 6530

Dear Stakeholder

ANGEL FACILITY OPERATIONS ENVIRONMENT PLAN

Woodside previously consulted you (correspondence dated 22 June 2023) regarding its plans to submit a revision of the Angel Facility Operations Environment Plan (EP) in Production Licence WA-3-L, Pipeline Licence WA-14-PL and Permit Area WA-16-L, approximately 126 km north-west of Dampier, Western Australia. The EP currently covers operations of a fixed platform (Angel) and subsea infrastructure connected to the Angel and Lambert Deep reservoirs.

The EP is being revised and resubmitted to integrate drilling, subsea installation, commissioning (drilling and tie-back) and production from the Lambert West reservoir (Lambert West tie-back) into the existing Angel production systems. The Lambert Deep and Lambert West Fields are located in Commonwealth waters around 15 km north-west of the Angel Platform in Permit Area WA-16-L.

Drilling activities

- Woodside plans to drill one new well in the Lambert West field (LDA-02), install an associated wellhead and Xmas tree. LDA-02 will be connected to the existing Lambert Deep two-slot production manifold using a ~8 to 10-inch internal diameter (ID) flexible well jumper. The well will be located at approximately 130 m water depth.

Subsea installation and commissioning activities

- Woodside also plans to install a subsea distribution unit (SDU) and flying leads at ~130 m water depth to provide connections to and control of key infrastructure in the subsea system; disconnect the existing Lambert Deep (LDA-01) well flying leads from existing Lambert Deep umbilical termination assembly (UTA) and reconnect it to the subsea distribution unit. The LDA-01 well is located at approximately 130 m water depth.

- Proposed activities also include pre-commissioning and cold-commissioning activities, including leak testing of the flexibles, subsea control systems verification and function-testing of valves to verify the production system and electric and hydraulic flying leads are ready for entry into the commissioning phase.

- Well start-up and commissioning (initial start-up) of the Lambert West well (LDA-02) involving slow and gradual build up to maximum well gas production rates and then well performance testing such as Multi-Rate Testing, simulated emergency shut down (ESD) of the well followed by Pressure Build-Up Testing.

Woodside is writing to you to follow up on feedback with respect to the proposed activities. You were previously sent a Consultation Information Sheet (also available on our website woodside.com), which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **22 July 2023**.

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 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

Page 2 of 2

2.10 Email sent to Exmouth Recreational Marine Users, Recfishwest, Marine Tourism

Association, WA Game Fishing Association (12 July 2023)

Dear Stakeholder

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones
In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.11 Email sent to Department of Agriculture Fisheries and Forestry (DAFF) – Fisheries and Biosecurity (19 July 2023)

Dear DAFF – Fisheries and Biosecurity

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation. We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.12 Email sent to Department of Defence (DoD) (19 July 2023)

Dear Department of Defence

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
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Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
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If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.13 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) (12 July 2023)

Dear DCCEEW

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and

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An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.14 Email sent to Director of National Parks (DNP) (12 July 2023)

Dear Director of National Parks

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
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Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Australian Marine Parks (AMPs)
We note Australian Government Guidance on consultation activities and confirm that:

- The proposed activities are outside the boundaries of a proclaimed Australian Marine Parks, with the:
    - Macedon wells and pipeline in Commonwealth waters located approximately 2.8 km north-east of the Muiron Islands Marine Management Area (State Marine Park) (measured from the closest point of the Operational Area) and ~10 km north-east from the Ningaloo World Heritage (Recreational Use Zone) (measured from the closest point of the Commonwealth Operational Area).
    - The Macedon pipeline in State waters located approximately 33km east of the Ningaloo Marine Park; approximately 8km east of the Muiron Islands Marine Management Area; and approximately 1.5 km from Round Island and Locker Island Nature Reserves (measured from the closest point of the State Operational Area).
- We have assessed potential impacts and risks to Australian Marine Parks (AMPs) in the development of the proposed Environment Plans and believe that there are no planned impacts as part of planned activities that have potential to impact the values of the Marine Parks.
- The worst-case credible risk being assessed in these EPs is the remote likelihood of a vessel collision event resulting a spill of marine diesel to the marine environment. Through review of hydrocarbon spill modelling of this unplanned risk, and with consideration of a 50-ppb dissolved and 100 ppb entrained hydrocarbon thresholds,

the following AMPs may be contacted in the event of a spill:
    - Gascoyne Marine Park
    - Montebello Marine Park
    - Ningaloo Marine Park
- For the Commonwealth EP, a Commonwealth Government-approved oil spill response plan will be in place for the duration of the activities. For the State EP, a State Government-approved oil spill response plan will be in place for the duration of the activities. For both, these will include notifications to relevant agencies and organisations as to the nature and scale of the event, as soon as practicable following an occurrence. The Director of National Parks will be advised if an environmental incident occurs that may impact on the values of the Marine Park.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.15 Email sent to Department of Planning, Lands and Heritage (DPLH) (12 July 2023)

Dear DPLH

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

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- Two non-producing wells with wellheads

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The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.16 Email sent to Western Australian Museum (12 July 2023)

Dear Western Australian Museum

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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Activity overview
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and repair (IMMR) activities of the:

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The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached is a list of shipwrecks in State waters within the EMBA.** You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.17 Email sent to Shire of Ashburton (12 July 2023)

Dear [Individual 6] and [Individual 7]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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Activity overview
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The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

2.18 Email sent to Onslow Chamber of Commerce and Industry (12 July 2023)

Dear [Individual 8]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas

Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

2.19 Email sent to Australian Conservation Foundation (ACF), Australian Marine Conservation Society (AMCS), Conservation Council of Western Australia (CCWA), Greenpeace Australia Pacific (GAP) and 350 Australia (350A) (12 July 2023)

Dear Stakeholder

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the

Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.20 Email sent to Cape Conservation Group (CCG) (12 July 2023)

Dear [Individual 9]

Woodside previously consulted you (email below) on its plans planning to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore

approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.21 Email sent to University of Western Australia (UWA) (12 July 2023)

Dear [Individual 10]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western

Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:
- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

Woodside is seeking your advice regarding any research activities that UWA may be undertaking that may overlap with our proposed activities.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,
Woodside Feedback

2.22 Email sent to Western Australian Marine Science Institution (WAMSI) (12 July 2023)

Dear [Individual 11]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
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Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

Woodside is seeking your advice regarding any research activities that WAMSI may be undertaking that may overlap with our proposed activities.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,
Woodside Feedback

2.23 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (12 July 2023)

Dear [Individual 12]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
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Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

Woodside is seeking your advice regarding any research activities that CSIRO may be undertaking that may overlap with our proposed activities.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand

consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,
Woodside Feedback

2.24 Email sent to Australian Institute of Marine Science (AIMS) (12 July 2023)

Dear [Individual 13]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
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The drilling and installation associated with the potential fifth well will be the subject of a separate EP.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand

consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,
Woodside Feedback

2.25 Email sent to Australian Hydrographic Office (AHO) (19 July 2023)

Dear AHO

Woodside previously consulted you (email below) on its plans submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

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Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **A shipping lane map is also attached.** You can also subscribe to receive updates on our consultation activities by subscribing here.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,
Woodside Feedback

2.26 Email sent to North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery, Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA), Tuna Australia (12 July 2023)

Dear Fishery Stakeholder

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

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Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.

Exclusionary / Cautionary Zones

In Commonwealth waters, a Petroleum Safety Zone extends a distance of 500m, measured from each point of the outer edge of the each of the wells and subsea equipment in the field. This is an exclusion zone which vessels are prohibited from entering or being present in, without Woodside permission.

A temporary 500m exclusion zone may be enacted around a vessel if it is planned to be in the field for an extended period, and is outside the Petroleum Safety Zone.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

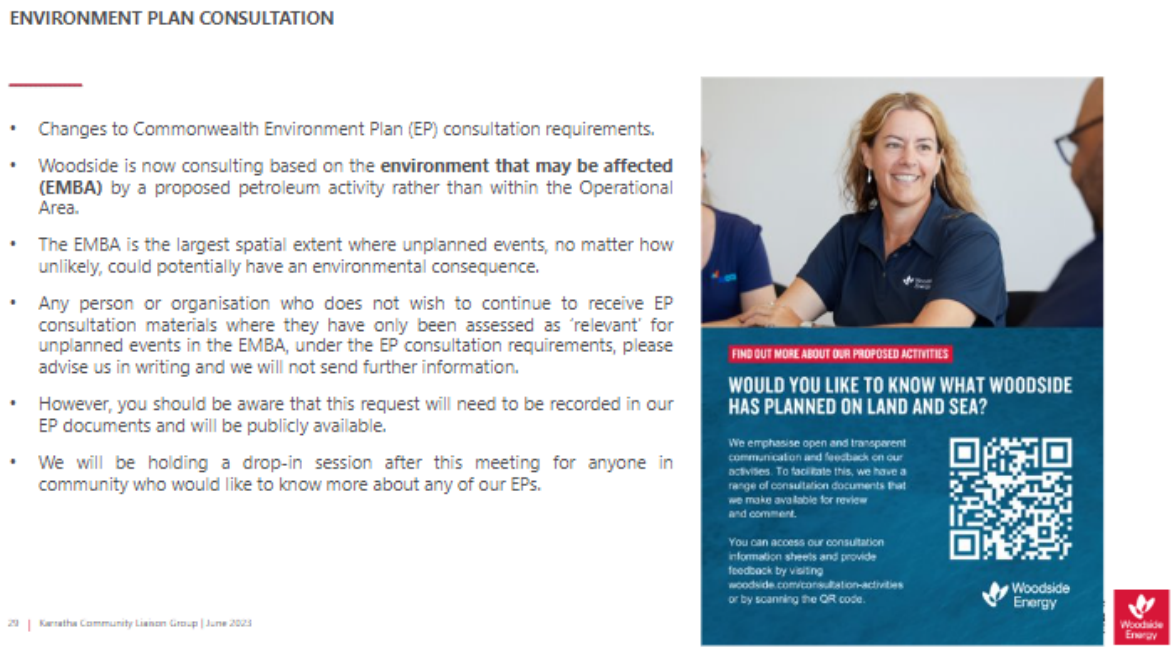
We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

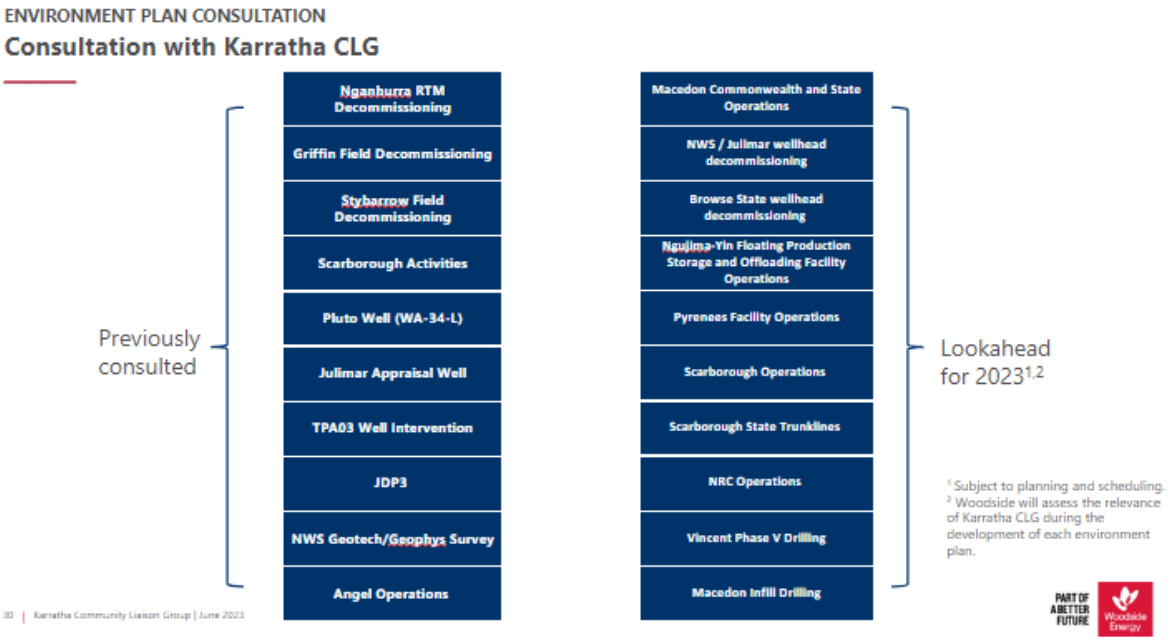
Fisheries have been identified as being relevant based on fishing licence overlap, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,
Woodside Feedback

2.27 Presentation to Karratha Community Liaison Group (29 June 2023)





2.28 Geotargeted social media campaigns

Facebook Campaign - May – November 2023

A Facebook information campaign was targeted along the coastline from Geraldton to Derby to ensure it reached all communities adjacent to the EMBA. Geotargeting locations are distributed along the coast, with 80 km radiuses around towns, cities and shires. Geotargeting points were also included for spaces between towns, cities

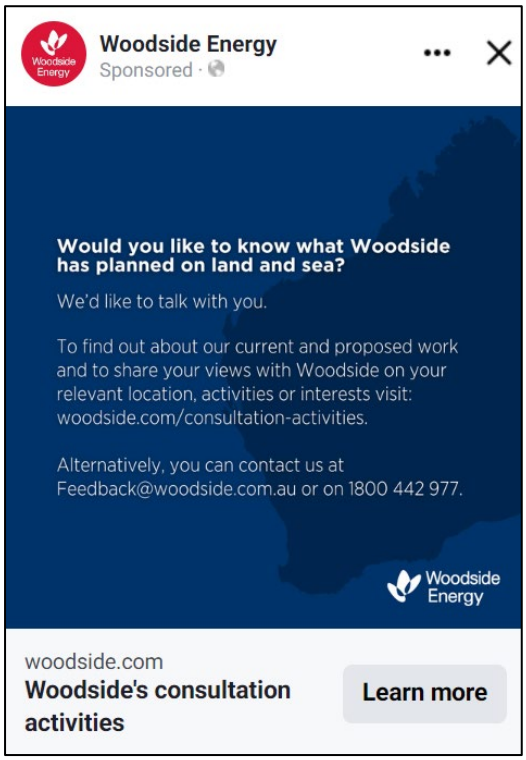
and shires to ensure no areas were missed – you'll see below there are latitude and longitude references for those locations.

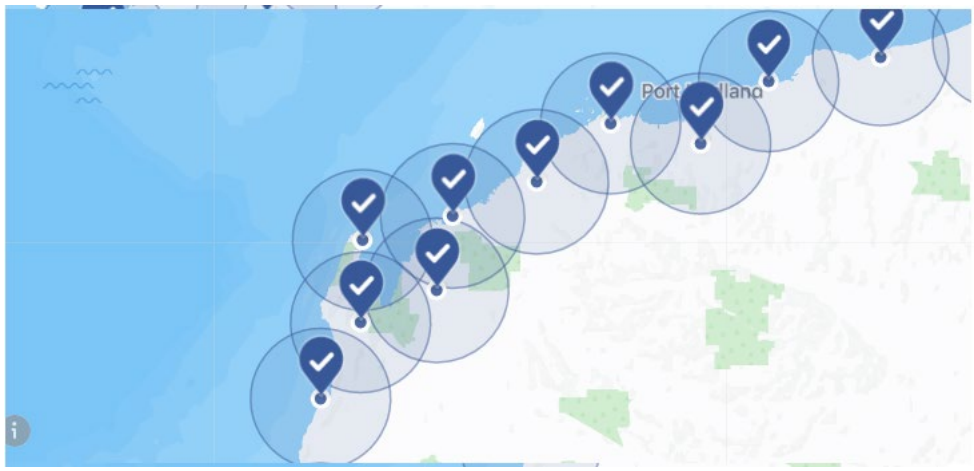
As at Wednesday 1 November 2023
Ad reach: 106,480 users
Impressions: 972,443 views
Clicks through to *Consultation Information* page: 4,218 link clicks

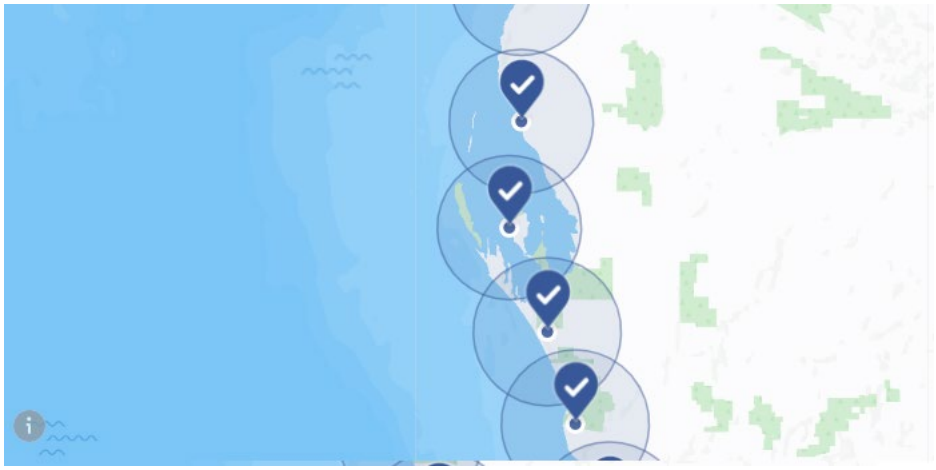
Geotargeting locations:

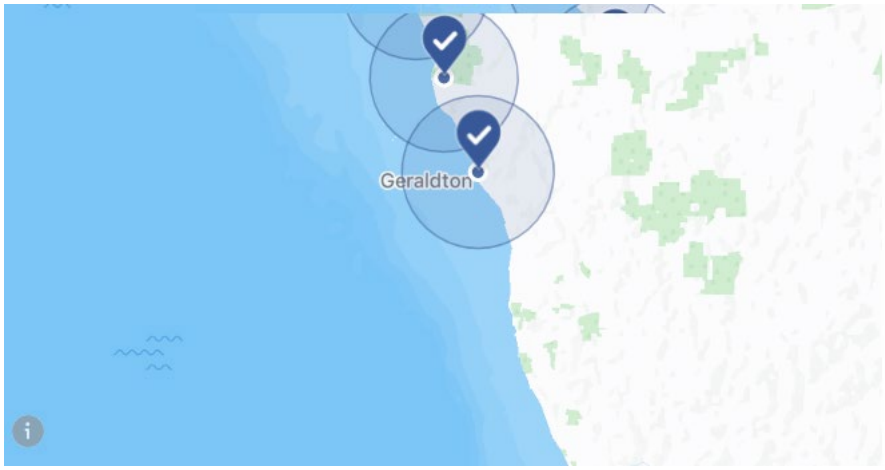
- Broome (+80 km)
- Carnarvon (+80 km)
- Denham (+80 km)
- Exmouth (+80 km)
- Geraldton (+80 km)
- Onslow (+80 km)
- Port Hedland (+80 km)
- Karratha (+80 km)
- Latitude -17 Longitude 122.65 Dampier Peninsula (+80 km)
- Latitude -22.75 Longitude 114.10 Exmouth Gulf (+80 km)
- Latitude -18.96 Longitude 121.94 Gingerah (+80 km)
- Latitude -27.85 Longitude 114.25 Kalbarri National Park (+80 km)
- Latitude -21.32 Longitude 116.03 Mardie (+80 km)
- Pardoo (+80 km)
- Latitude -20.94 Longitude 117.83 Sherlock (+80 km)
- Latitude -26.96 Longitude 113.95 Tamala (+80 km)
- Latitude -19.88 Longitude 121.15 Telfer (+80 km)
- Latitude -17.52 Longitude 123.56 Willare (+80 km)

- Latitude -22.43 Longitude 114.93 Yannarie (+80 km)







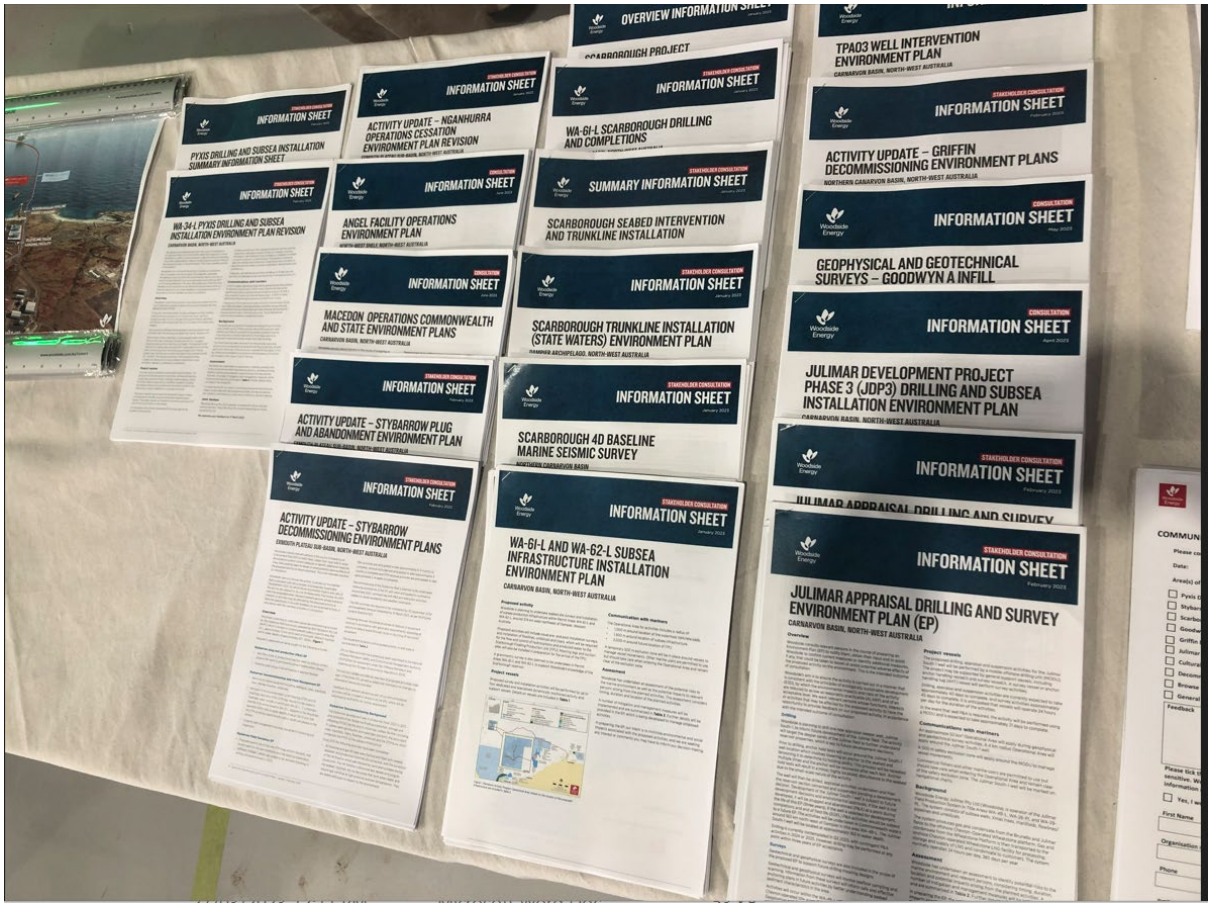


2.29 Community Information Sessions (June 2023)

2.29.1 Exmouth Community Information Session (17 June 2023)

Location	Exmouth
Date	17 June 2023
Description of the consultation	Woodside supported the PHI Helicopters Community Open Day at the Exmouth Aerodrome. Representatives from Woodside, including project and environment personnel equipped to answer technical questions, attended the event. Copies of the Consultation Information Sheets and Summary Consultation Information Sheets were available to attendees. Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions and provide feedback. A number of Environment Plan Consultation Information Sheets were available to attendees including the Macedon Operations Commonwealth EP Consultation Information Sheet.
Advertising and invitations	Ahead of the event, Woodside advertised the session via the means below to assist individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • From 15−17 June 2023, Woodside commenced a geotargeted social media campaign in Exmouth and surrounding areas advertising the Community Information Session.
Estimated number of individuals consulted	• An estimated 300 community people attended the event (adults and children).
Summary of Feedback, Objection or Claim	
Issues discussed from around 5 community members included: • Whales - what Woodside is doing to protect whales, what the impact to whales might be • The Scarborough FPU and nature of this i.e. is it DP or moored to the seabed, was it like an FPSO • General interest questions on Scarborough project – location, activities (i.e. trunkline installation, construction work at Pluto gas plant (within existing footprint)), trunkline size and routing – and why the location was chosen, field life and start up timing • Turtle nesting and lighting controls • Funding for whale shark research Other EP consultation information sheets were available and taken by attendees. Two attendees said they were taking the information sheets so they could see pipeline routes (for fishing opportunities), specifically mentioning permit numbers they were after.	
Assessment of Merits of Feedback, Objection or Claim and Woodside's 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**).	

2.29.1.1 Banners and consultation sheets



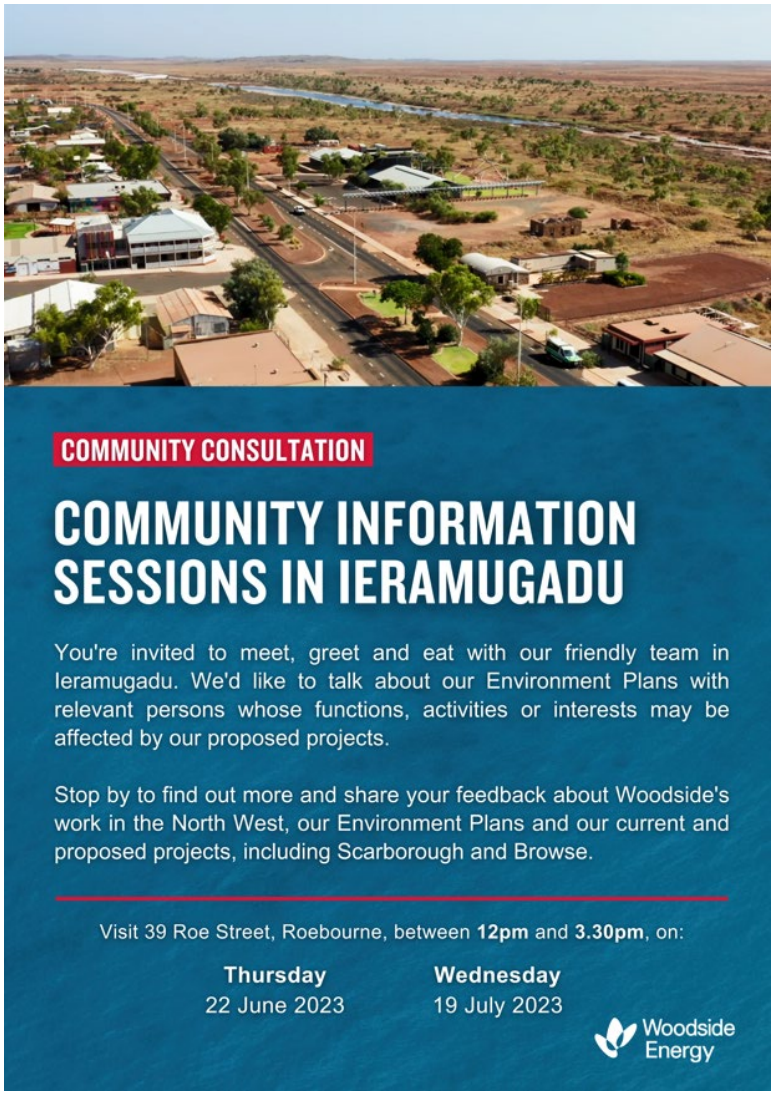
2.29.1.2 Woodside stand

2.29.2 Roebourne Community Information Session (22 June 2023)

Location	Roebourne
Date	22 June 2023
Description of the consultation	A Community Information Session was held in Roebourne. The consultation information session was hosted by members from Woodside's Corporate Affairs and Environment teams and was open for all community members to receive information regarding Woodside's Environment Plans and proposed and planned activities. A number of EP Consultation Information Sheets were available to attendees including the Macedon Operations Commonwealth EP Consultation Information Sheet.
Advertising and invitations	Ahead of the event, Woodside advertised the session via the means below to assist individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Woodside advertised the session by distributing posters advising of the event details in the local community and visiting offices to raise awareness, including the offices of local Traditional Custodian groups. • From 15−17 June 2023, Woodside commenced a geotargeted social media campaign in Roeburne and surrounding areas (**Record of Consultation, reference 2.29.2.1**) advertising the Community Information Session. • Woodside distributed posters advertising the community information session locally, including:

	○ Front door and front window of Woodside Roebourne office ○ Online distribution via the Roebourne Community Calendar ○ Roebourne Police Station provided with printed copy • Woodside staff also visited the following offices to advise of the community information session: ○ Ngarluma and Yindjibarndi Foundation Ltd (NYFL) ○ Ngarliyarndu Bindirri Aboriginal Corporation ○ Yinjaai-Barni Art ○ Foundation Foods
Estimated number of individuals consulted	• N/A
Summary of Feedback, Objection or Claim	
Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions and provide their feedback.	
Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	
There were no feedback, 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**).	

2.29.2.1 Social Media



2.29.3 Karratha Community Information Sessions (28 and 29 June 2023)

Location	Karratha – Shopping Centre, Woodside office
Date	**28, 29 June 2023**
Description of the consultation	Community Information Sessions were held in Karratha. Representatives from Woodside, including project and environment personnel equipped to answer technical questions, attended the event. A number of Environment Plan Consultation Information Sheets and targeted Consultation Summary Information Sheets were available to attendees including the Macedon Operations Commonwealth EP Consultation Information Sheet.
Advertising and invitations	Ahead of the event, Woodside advertised the sessions via the means below to assist individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Ahead of the 28 June 2023 event, a story was posted on Woodside's Facebook page (**Record of Consultation, reference 2.29.3.2**), sharing details of its shopping centre stand where Consultation Information Sheets regarding planned and proposed activities were available, including the activities proposed under this EP. • Ahead of the 29 June 2023 event, the Community Information Session was advertised in

	the Pilbara News (**Record of Consultation, reference 2.29.3.1**), geotargeting a social media campaign in Karratha and surrounding areas and posting the event details on Woodside's Facebook page (**Record of Consultation, reference 2.29.3.3**). • Woodside advertised the session by distributing posters advising of the event details in the local community and visiting offices to raise awareness, including the offices of local Traditional Custodian groups.
Estimated number of individuals consulted	• Estimated number of people consulted: 10-20

Summary of Feedback, Objection or Claim
Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions and provide their feedback. • Employment opportunities provided by the resources sector • General interest in Woodside EPs
Assessment of Merits of Feedback, Objection or Claim and Woodside's 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**).

2.29.3.1 Newspaper advertisement – Pilbara News (28 June 2023)

Rio reaches $1b Range milestone

Rio Tinto iron ore chief executive Simon Trott and China Baowu vice-president Hou Angui.

CHEYANNE ENCISO

Rio Tinto has spent $1 billion with WA businesses as it progresses the development of its Western Range joint venture with China Baowu Steel Group.

Simon Trott, iron ore chief executive of Rio Tinto, said the $1b spend marked a considerable milestone.

"Rio Tinto spends billions of dollars with local suppliers across Western Australia and the Pilbara every year, helping support thriving communities across the State by providing local jobs for local people," he said.

The 25 million tonnes-a-year Western Range project will help sustain production of Rio's flagship Pilbara blend product from its existing Paraburdoo mining hub as the Eastern Range project depletes. China Baowu said it was pleased to see the Western Range project progressing smoothly.

Premier Roger Cook said significant projects such as the Western Range reinforced WA as an attractive and secure destination for business and investment.

"I want to commend Rio Tinto and Baowu on this latest project milestone and acknowledge their efforts in investing in WA to ensure WA businesses and workers benefit most," he said.

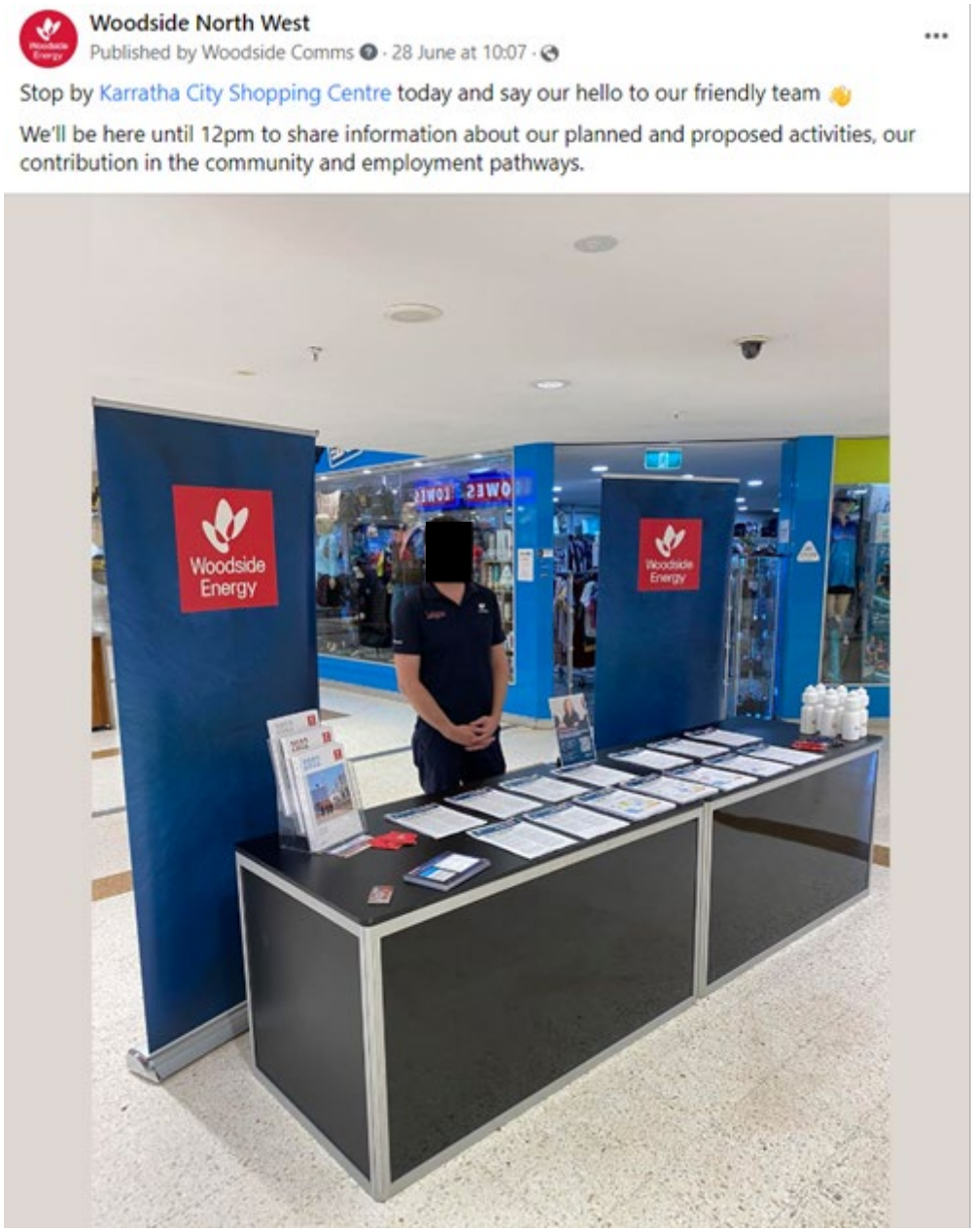
Rio in March reported it had spent $8.6b with more than 2400 WA and Indigenous businesses in 2022 as part of its local buying program.

The figure included $618m with Pilbara-based businesses, $504m with Indigenous companies across WA, and $439m with businesses run by traditional owners.

2.29.3.2 Facebook post (28 June 2023)

On 28 June 2023, Woodside posted a story on its Woodside North West Facebook account, sharing details of its shopping centre stand where Consultation Information Sheets regarding is planned and proposed activities were available, including the activities proposed under this EP.

Platform/channel: Woodside North West (Facebook)
Date: 28 June 2023
Reach: 1,464 viewers
Impressions: 1,464 views

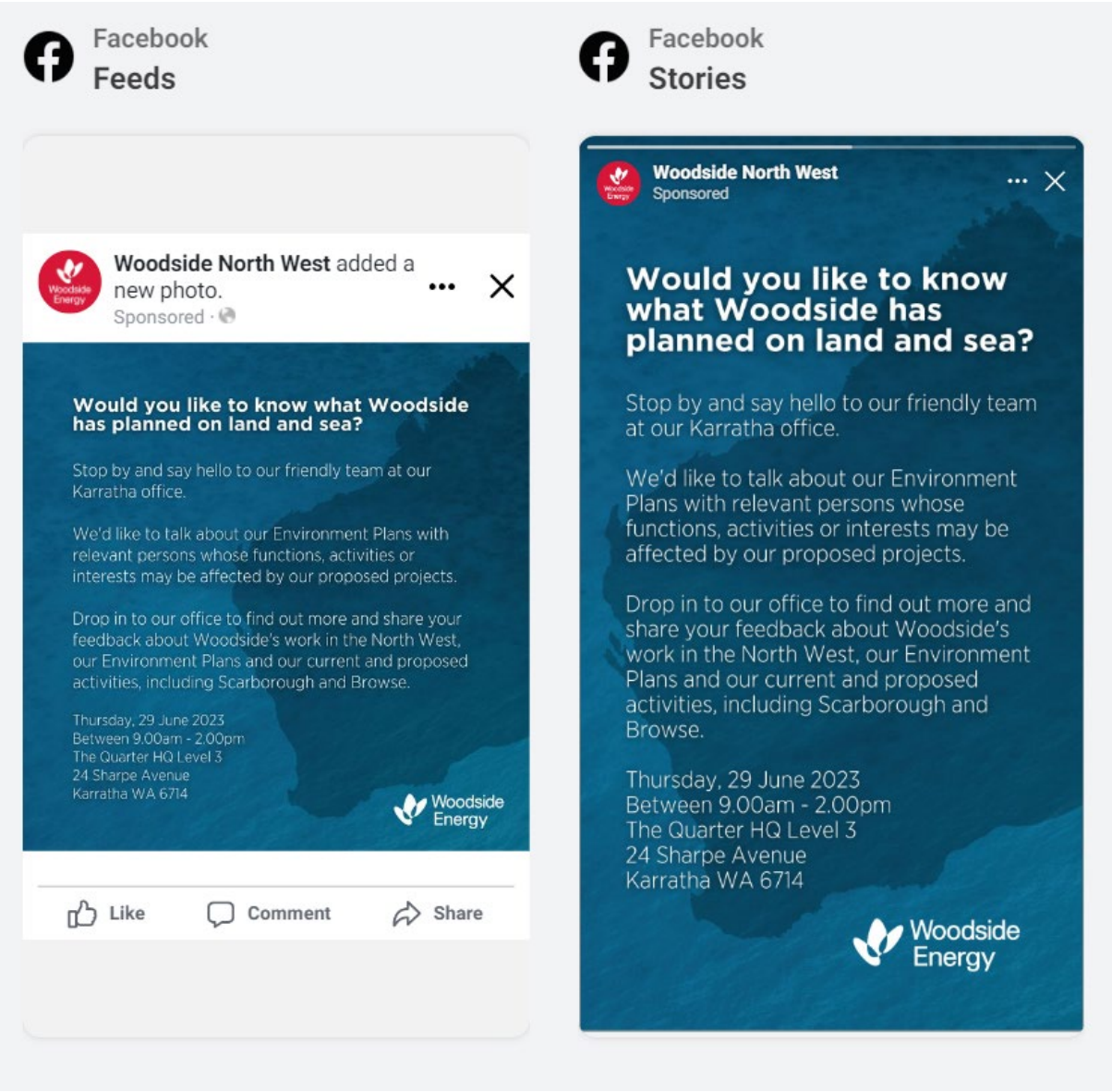


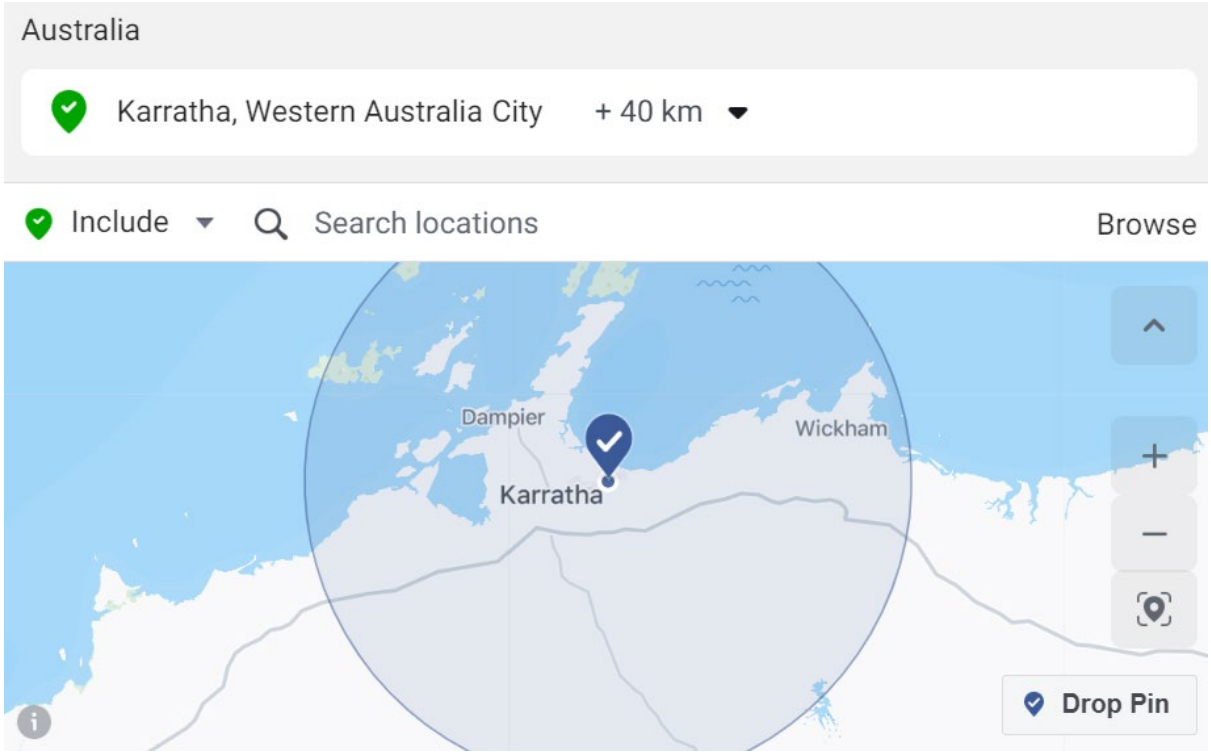
2.29.3.3 Geotargeted Social Media Campaign (29 June 2023)

On 29 June 2023, Woodside held a drop-in session at its Karratha town office. The drop-in session was hosted by one of Woodside's Senior Environmental Advisers and was open for all community members to receive information regarding Woodside's Environment Plans and proposed and planned activities.

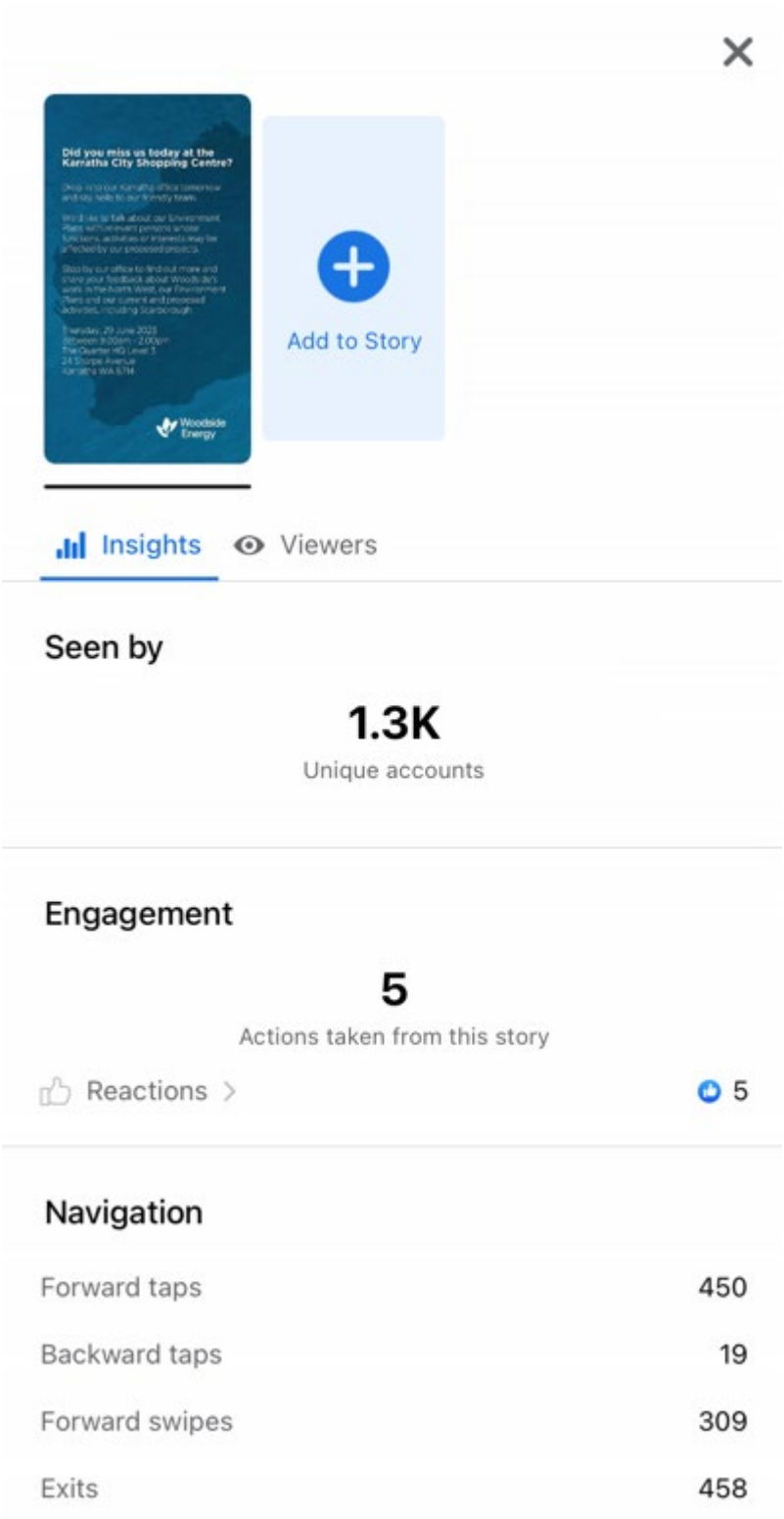
Dates: 26 June 2023 – 29 June 2023
Geotargeting: 40km radius around Karratha
Reach: 19,240 viewers
Impressions: 22,931 views

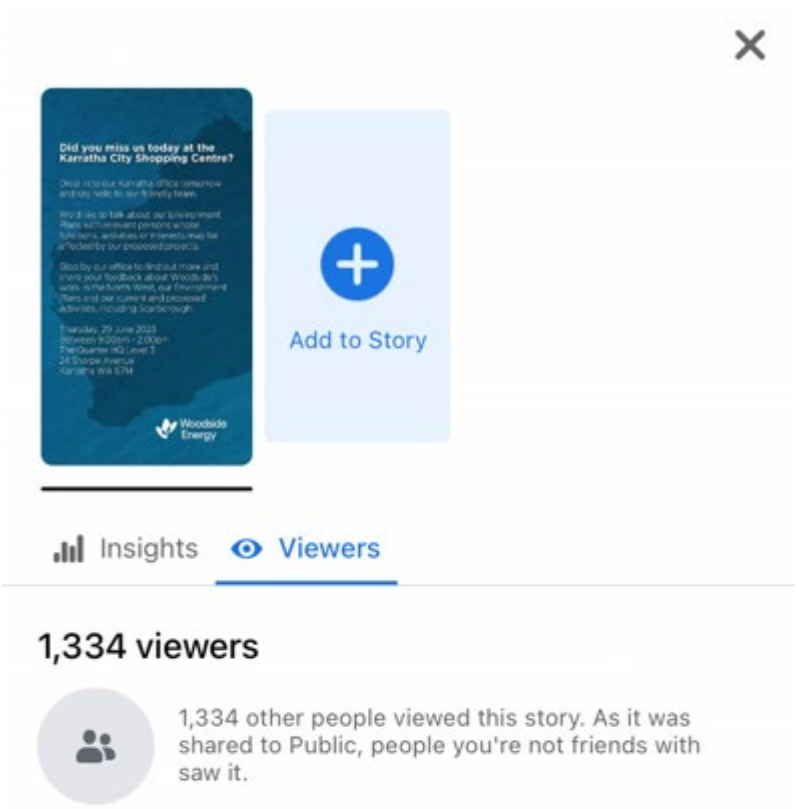
Campaign name	Ad set name	Delivery	Reach	Impressions	Frequency	Attribution setting	Results
EP Drop in session - KTA	All	Recently completed Campaign	19,240	22,931	1.19	7-day click or 1-day view	19,240 Reach





On 28 June 2023, Woodside posted a story on its Woodside North West Facebook account, sharing details of its drop-in session.
Reach: 1,366 viewers
Impressions: 22,931 views
Geotargeting: 40 km radius around Karratha





2.30 Community Information Sessions (July - August 2023)

2.30.1 Roebourne Community Information Session (19 July 2023)

Location	**Roebourne**
Date	**19 July 2023**
Description of the consultation	A Community Information Session was held in Roebourne. The consultation information session was hosted by members from Woodside's Corporate Affairs and Environment teams and was open for all community members to receive information regarding Woodside's Environment Plans and proposed and planned activities. A number of Environment Plan Consultation Information Sheets were available to attendees including the Macedon Operations Commonwealth EP Consultation Information Sheet.
Advertising and invitations	Ahead of the event, Woodside advertised the session via the means below to assist individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Woodside advertised the session by distributing posters advising of the event details in the local community and visiting offices to raise awareness, including the offices of local Traditional Custodian groups (**Record of Consultation, reference 2.30.1.1**). • Woodside distributed posters advertising the community information session locally, including: o Front door and front window of Woodside Roebourne office, with the open sign and fact sheets on display inside o On the noticeboard at Roebourne Community Resource Centre (inside the Ieramugadu Store (NYFL's Foundation Foods). o Roebourne CRC o Pilbara Community Legal Service o NBAC o WAPOL o BP • Woodside staff also visited the following offices to advise of the community information session and provide posters: o Ngarluma and Yindjibarndi Foundation Ltd (NYFL) o Yinjaai-Barni Art Group o Yandi for Change o NYFL o WY Program o Roebourne Library o Yindjibarndi Ranger office o Ashburton Aboriginal Corporation o A poster was also put up at Cossack.
Estimated number of individuals consulted	• N/A

Summary of Feedback, Objection or Claim
Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions and provide their feedback.
Assessment of Merits of Feedback, Objection or Claim and Woodside's Response
There were no feedback, 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**).

2.30.1.1 Posters at Woodside's Roebourne Office

2.30.2 Karratha FeNaCING Festival (5 and 6 August 2023)

Location	**Karratha – FeNaCING Festival**
Date	**5, 6 August 2023**
Description of the consultation	Woodside had a stand at the annual FeNaCING Festival held in Karratha. Members of Woodside's Corporate Affairs and Operations teams actively engaged with the community to discuss proposed Environment Plan activities. The stand included Consultation Information Sheets for a number of Environment Plans including Macedon Operations Commonwealth EP.
Advertising and invitations	Ahead of the event, Woodside advertised the session via the means below to assist individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in the Pilbara News on 2 August 2023 (**Record of Consultation, reference 2.30.2.1**). • A social media story appeared on the Woodside Nort West Facebook page on 2 August 2023 (**Record of Consultation, reference 2.30.2.1**). • Directly inviting local Traditional Custodian groups.
Estimated number of individuals consulted	Woodside estimates that over 2,000 people visited the Woodside stand based on the number of completed consultation forms and questionnaires.

Summary of Feedback, Objection or Claim
Community discussions centred on: • Update of Woodside activities and employment and contracting opportunities • All community members were encouraged to provide their views on Woodside's activities through the Woodside feedback form on the Woodside website, or to subscribe to Woodside updates. An iPad was available for stakeholders to do this on the spot.
Assessment of Merits of Feedback, Objection or Claim and Woodside's 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**).

2.30.2.1 Pilbara News Advertisement (2 August 2023)

Melski's murals brought to life

DANIEL SPENCE

Tambrey Primary School has successfully brought renowned artist Mel McVee, popularly known as Melski, and her sister Tash to create three vibrant murals around the school premises.

With funding support from corporate entities like Woodside, FMG, and Pilbara Real Estate, as well as community contributions from Jetwave Marine, Santos, Yara, and QUBE Energy, the school raised more than $20,000 to bring this art project to life.

Home to nearly 700 students, with a third of them having Indigenous backgrounds, school Deputy Principal Toni Whitbread and visual arts specialist Felicity Collins said the mission of the project was to celebrate diversity and create a sense of belonging by reflecting students' culture through artwork.

The school's mission was to celebrate diversity and create a profound sense of belonging by reflecting the students' culture through artwork.

What particularly attracted the school to Mel's artwork was its unique paint-by-numbers style, which allowed students to actively participate in the mural creation process.

Eager to engage the entire school community, the school declared a special "paint week," during which more than 650 students enthusiastically joined hands to contribute to the murals.

Throughout the week, students not only participated in the creation of the murals but also enjoyed immersive art sessions in the park, indulging in painting, drawing, collaging, and chalk drawings under the enchanting winter weather.

The entire experience served to nurture the students' creativity and appreciation for art, leaving a lasting impact on their artistic aspirations.

Ms Collins said she was thrilled to see the whole school coming together for a week of collaborative art.

"We were delighted to see students immersed in a week of collaborative art," she said.

"Students not only contributed to the creation of the mural but also with their involvement in the immersive art in the park session — which included painting, drawing collaging and chalk drawings — while all outside soaking up the winter weather."

The artist was brought to the school to create murals.

2.30.2.2 Woodside North West Facebook Page (2 August 2023)

2.30.2.3 Environment Plan Banner

2.30.3 Passion of the Pilbara, Onslow (18 August 2023)

Location	Onslow – Passion of the Pilbara festival
Date	**18 August 2023**
Description of the consultation	Members of Woodside's Corporate Affairs engaged with the community to discuss proposed Environment Plan activities. The stand included Consultation Information Sheets for a number of Environment Plans including the Macedon Operations Commonwealth EP.
Advertising and invitations	Ahead of the event, Woodside advertised the session via the means below to assist individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • The consultation opportunity was promoted prior to the Festival in a story on the Woodside North West Facebook page on 17 August 2023.
Estimated number of individuals consulted	• Woodside estimates approximately 100 people visited the Woodside stand.

Summary of Feedback, Objection or Claim

Community discussions centred on:

- Update of Woodside activities and employment opportunities
- General Scarborough project update and operations. A Scarborough operations map and Floating Production Unit images were available (see below). There was general community interest and support for the project. Discussions included:
  - Support for the project and dissatisfaction about protester activity against the project
  - Number of jobs during construction
  - Location of activities (noting activity was not off the coast of Onslow)
- General interest on the Browse project included:
  - Awareness that Carbon Capture Storage concept is feasible and has been included in the development concept.
- One individual asked in relation to the Scarborough Project what Woodside was doing in relation to the protecting environment.
- Community members were encouraged to provide their views on Woodside's activities through the Woodside feedback form on the Woodside website, or to subscribe to Woodside updates.

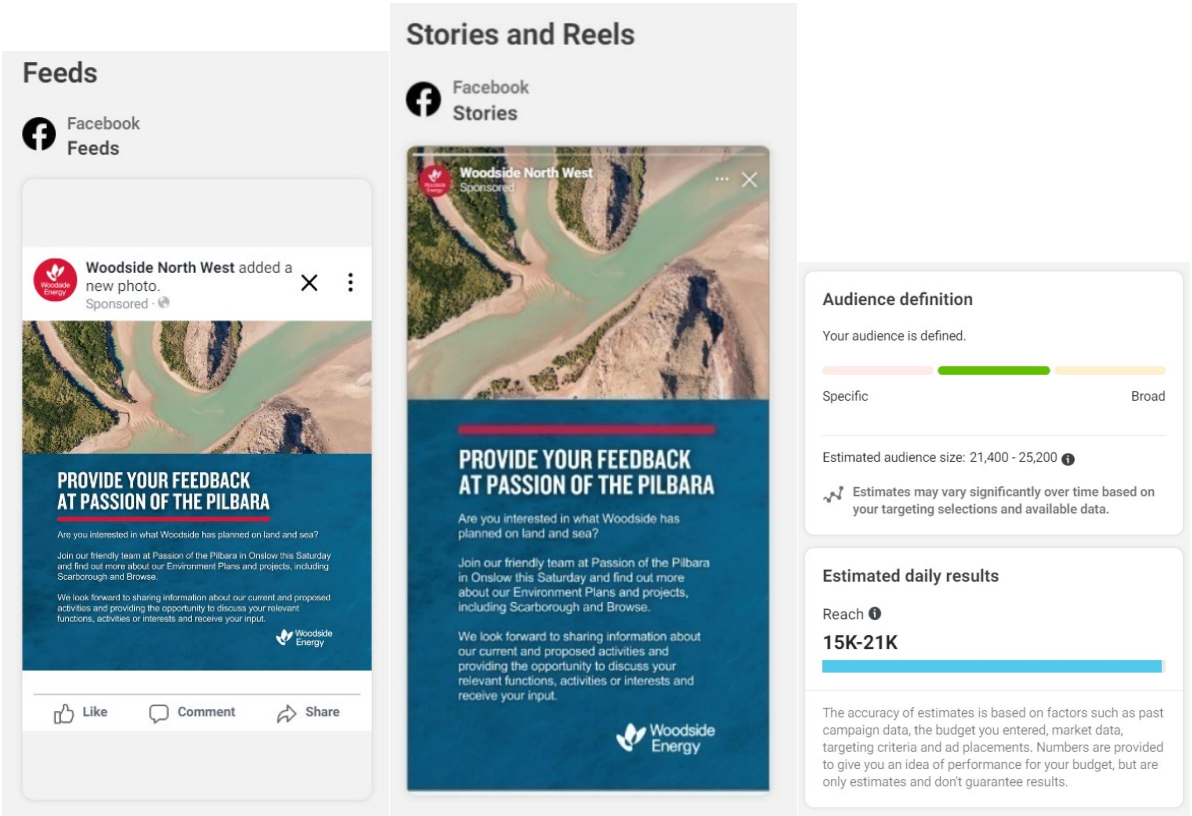
Assessment of Merits of Feedback, Objection or Claim and Woodside's Response

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** in the EP).

2.30.3.1 Passion of the Pilbara Facebook Post (17 August 2023)

2.30.3.2 Woodside Facebook Post and Story (17 August 2023)



2.30.3.3 Woodside Marquee

2.30.3.4 Woodside Information Sheets

2.31 Community Information Sessions (September - October 2023)

2.31.1 Karratha, Port Hedland, Roebourne Community Information Sessions (18 – 20 September 2023)

Location	**Karratha, Port Hedland, and Roebourne**
Date	18 – 20 September 2023
Description of the consultation	Woodside hosted community consultation sessions in Karratha, Port Hedland and Roebourne to enable community members to understand Woodside's proposed activities and how it may affect them, ask questions, and provide their feedback. Woodside Project, Corporate Affairs, First Nations and Environment representatives were available to answer questions. A number of Environment Plan Consultation Information Sheets were available to attendees including the Macedon Operations Commonwealth EP Consultation Information Sheet.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in the Pilbara News on 13 September 2023 (**Record of Consultation, reference 2.31.1.1**). • Geotargeted social media campaign advertising in Karratha (Reach 22,095), Port Hedland (reach 26,487), and Roebourne (reach 22,134) (+80 kms) from 6 to 16 September 2023 (**Record of Consultation, reference 2.31.1.2**). • An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website), Scarborough Project banner, and Browse Project banners were displayed stand along with current EP factsheets.
Estimated number of individuals / organisations consulted	18 September 2023 – Karratha. Estimated number of people consulted: 20 19 September 2023 – Port Hedland. Estimated number of people consulted: 20 20 September 2023 – Roebourne. Estimated number of people consulted: 0
Summary of Feedback, Objection or Claim	
Community discussions centred on: • Update of Woodside activities and employment and contracting opportunities. • General Woodside activities on the North West Shelf including the location of operations. Woodside noted the need for additional gas and the role Browse could play at the Karratha Gas Plant. • Some individuals had worked on a Woodside operations / project of knew family and friends that had. • General overview of what an EMBA was. • All community members were encouraged to provide their views on Woodside's activities through the Woodside feedback form on the Woodside website, or to subscribe to Woodside updates. An Ipad was available for stakeholders to do this on the spot.	
Assessment of Merits of Feedback, Objection or Claim and Woodside's 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** in the EP).	

2.31.2 Pilbara News Advertisement (13 September 2023)

Pilbara NEWS
Wednesday, September 13, 2023
pilbaranews.com.au

Mayor runs again as candidates put forward pitches

City of Karratha Mayor Peter Long. Picture: Tom Zaunmayr

DANIEL SPENCE

Nominations have closed for the 2023 Karratha mayoral and councillor elections, with the list of candidates running to be the city's next mayor being released.

Peter Long — who has been in the position since 2011 — will be running again and said, if re-elected, he would continue to provide Karratha with intelligent, safe and inclusive leadership.

"I am a full-time mayor, always able to receive you and your ideas," he said. "I love the Pilbara and our community."

Regional Development Australia Pilbara chief executive and former local government minister Tony Simpson is also running for mayor.

His vision is to join forces with State and Federal entities to progress childcare, health and housing solutions.

"I would work to draw major brand investments in retail and leisure to provide more options for residents. Identify land for a foreshore entertainment hub and infuse Karratha with festivals and quality entertainment," he said.

Brenton Johannsen — who ran for the seat of Durack at the recent Federal election under One Nation — said he would donate the entire mayoral allowance to charity.

"I will be a committed full-time mayor, my goal is to visit all businesses and resident groups on a regular basis to touch base and discuss any new issues," he said.

Mr Johannsen said his aims would be neighbourhood safety, more opportunities for locals, ratepayer discounts for local facilities, moving airport smokers' areas, and eco-friendly weed management.

As a sitting councillor, radio announcer, parent and former local business owner mayoral candidate Pablo Miller said he had got to know the people of Karratha.

"As your mayor, I will continue to not only listen but be a strong advocate for our community," he said. Mr Johannsen said he was interested in expanding opportunities for young people and families, growing local and cultural tourism, supporting businesses and bolstering mental health services.

The owner of the North West Brewing Co Daniel Scott has a vision as mayor to grow Karratha's economy.

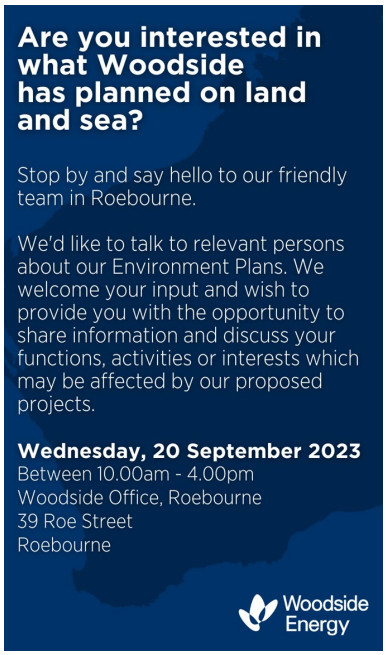
His plan is to create an education and sporting precinct between the TAFE and St Luke's College, with accommodation for secondary and tertiary students.

His plans also include a new home for the Pilbara Universities Centre, and a sporting hub for rugby, soccer, hockey and gymnastics.

Those running for council include Daniel Scott, Kieran Dart, Wayne Mothershaw, Mr Johannsen, Sarah Roots, George Levissianos, Bradley Davey, Mr Simpson, James Corea, Joseph Almonte and Geoff Harris.

Elections will be held for the four vacancies on October 21st.

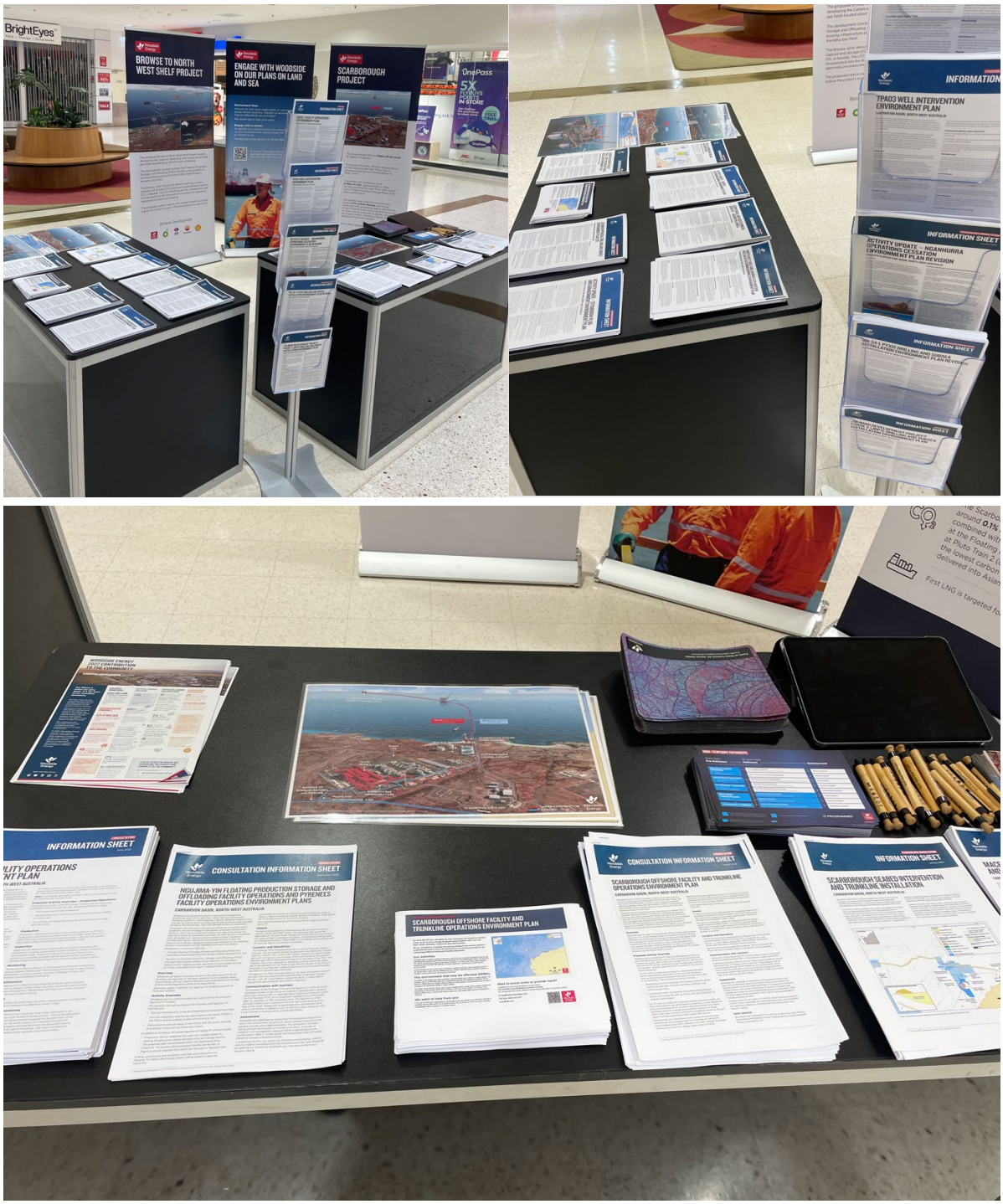
2.31.2.1 Social Media (6 - 16 September 2023)



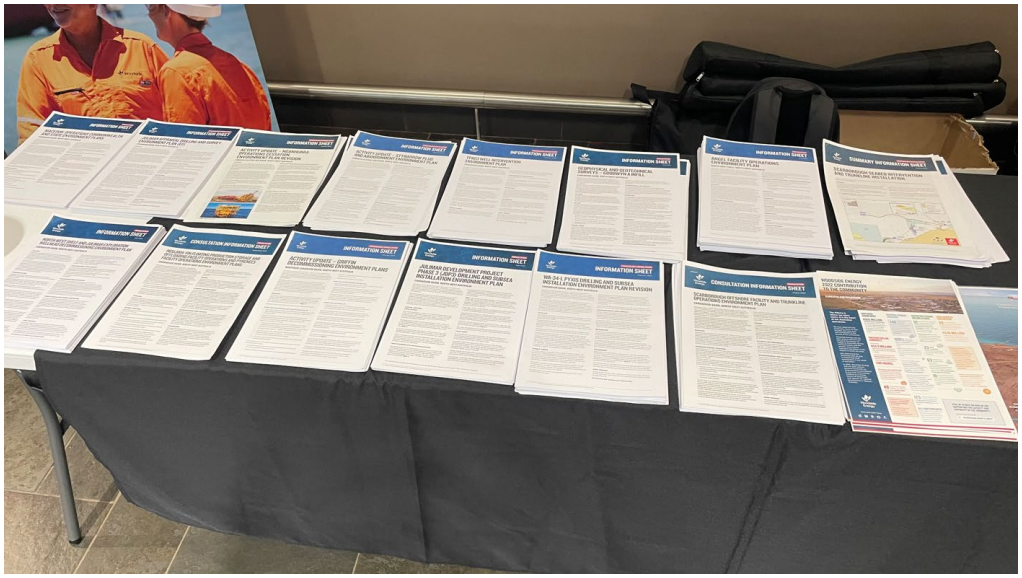
Social media reach:

Location	Reach
Karratha	22,095
Port Hedland	26, 487
Roebourne	22,134

2.31.2.2 Karratha Shopping Centre (18 September 2023)



2.31.2.3 South Hedland Square (19 September 2023)



2.31.2.4 Roebourne – Woodside Office (20 September 2023)

2.31.3 Carnarvon and Denham Community Information Sessions (16 and 17 October 2023)

Location	Carnarvon and Denham - Community Consultation Roadshow
Date	16 and 17 October 2023
Description of the consultation	Woodside hosted community consultation sessions in Carnarvon and Denham to enable community members to understand Woodside's proposed activities and how it may affect them, ask questions, and provide their feedback.

	Woodside Project, Corporate Affairs and Environment representatives were available to answer questions. A number of Environment Plan Consultation Information Sheets were available to attendees including the Macedon Operations Commonwealth EP Information Sheet.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: ○ Advertisement in the Pilbara News on 4 October 2023 (**Record of Consultation, reference 2.31.2.1**). ○ Directly inviting local Traditional Custodian groups. ○ An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website) was displayed along with current EP factsheets.
Estimated number of individuals / organisations consulted	16 October - Carnarvon – 3 17 October - Denham – 2 (Shire of Shark Bay)
Summary of Feedback, Objection or Claim	
• General interest in Woodside activities in the Pilbara • Discussion with the Shire of Shark Bay: Explained purpose of consultation for EPs Noted consultation based on an EMBA and no activities planned in Shark Bay Provided an overview of Woodside activities Shire advised it will provide a list of other relevant persons to consult, recognising the need to consult the community more broadly	
Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	
Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions, and provide their feedback. Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification, and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see **Section 5.2** of the EP).	

2.31.3.1 Pilbara News Advertisement (4 October 2023)

Pilbara NEWS
Wednesday, October 4, 2023
pilbaranews.com.au
NEWS 13

MinRes in $24m deal with local company

DANIEL SPENCE

Local Pilbara Indigenous-owned business Djeloanna Pty Ltd has been awarded a $24 million contract by Mineral Resources as part of the company's flagship Onslow Iron project.

It is the largest contract MinRes has ever signed with an Indigenous-owned business, as well as the first contract awarded to Djeloanna Pty Ltd, which is a Robe River Kuruma business. The Robe River Kuruma people are the traditional owners of the land on which the Ken's Bore mine site is located.

The four-year contract is for exploration earthworks at Ken's Bore mine site, east of Onslow, including constructing access tracks, building drill pads, road maintenance and general earthworks.

Djeloanna Pty Ltd will employ about 10 people as part of the contract including a project manager, mechanics, operators and administration staff.

MinRes managing director Chris Ellison and Djeloanna business owner Bevan Wally. Picture: Russell James

Djeloanna Pty Ltd owner Bevan Wally, who grew up on country, said: "The support provided by MinRes has given us the confidence and capacity to help establish and grow our business. MinRes have shown us action and given us commitments. It's unreal for them to invest and give us a go."

MinRes managing director Chris Ellison said that the company was proud to partner with businesses such as Djeloanna that had such a strong connection to country.

"Providing practical guidance and support, such as guaranteeing finance for equipment and plant, helps to build local capability and ensure Indigenous-owned businesses share in our success," he said.

At the contract signing ceremony in Perth, Mr Wally presented traditional gifts to Mr Ellison, including boomerangs, a shield and a long stick.

Schools to get a staff cash boost

DANIEL SPENCE

Pilbara schools will benefit from a multi-million-dollar cash injection from the State Government to recruit and retain staff.

Education Minister Tony Buti said the success of last year's temporary Regional Attraction and Incentive Package meant an additional 18 schools would benefit from $15.49 million worth of incentive packages.

Schools in the Pilbara who will receive a boost include Broome Senior High School, Carnarvon Community College, Karratha Senior High School, Hedland Senior High School, Tom Price Senior High School and Newman Senior High School.

The incentive helps rural schools to attract and recruit teachers and retain staff and school administrators at schools by providing additional financial incentives.

Staff members will receive between $5000 and $17,000 for working in rural and remote public schools for the 2024 school year.

The incentives will be paid in two instalments: the first at the start of the 2024 school year, the balance paid at the end of the 2024 school year.

Dr Buti said schools in regional and remote areas faced additional challenges when recruiting and retaining teachers.

"This significant investment will bring greater continuity for regional and remote students, their families, and the whole community," he said. The temporary Regional Attraction and Retention Incentive was initially allocated to 48 regional and remote schools.

Government of Western Australia
Department of Health

Fluoridation for the Newman drinking water system

Community water fluoridation helps protect teeth against decay and is a safe and effective way of improving oral health. More than 92 per cent of the Western Australian population, including the Perth metropolitan area and most large regional communities in the Pilbara and other parts of Western Australia, has benefited from fluoridation of drinking water for more than 40 years.

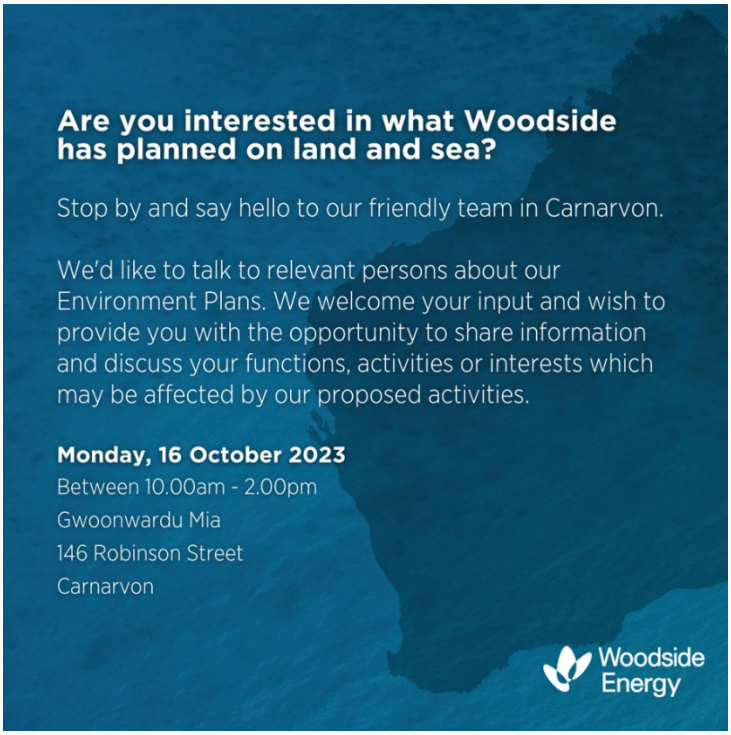
Fluoridation equipment has been installed at the water treatment plant servicing Newman and is now operational. As with similar plants located throughout Western Australia, the Department of Health will monitor the performance of the water treatment plant to ensure compliance with the *Australian Drinking Water Guidelines* and the *Fluoridation of Public Water Supplies Act 1966*.

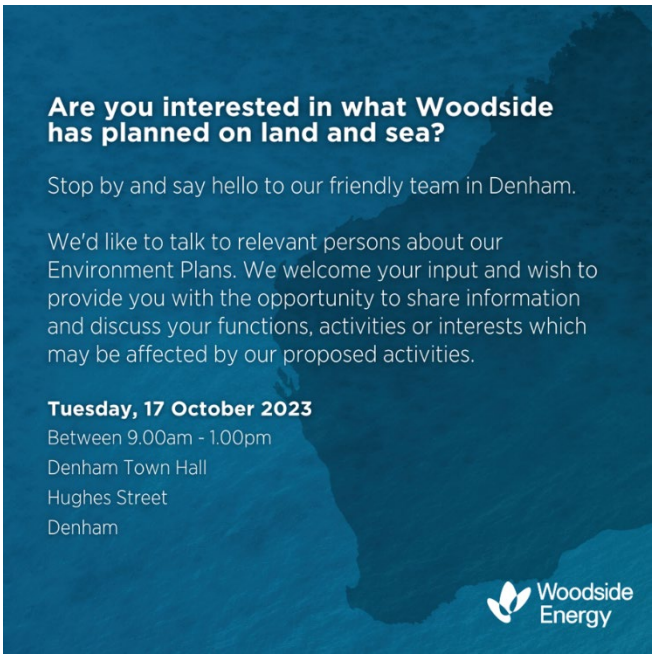
For more information please contact the Department of Health by email to ehinfo@health.wa.gov.au or call 08 9222 2000 or visit health.wa.gov.au and search fluoridation.

Dr Andrew Robertson
Chief Health Officer

2.31.3.2 Banners and consultation sheets (16 October 2023)

2.31.3.3 Social media tile and story (9 to 16 October 2023)





2.31.3.4 Pilbara News Advertisement (11 October 2023)

Pilbara NEWS
Wednesday, October 11, 2023
pilbaranews.com.au

Animal flight policy criticised

CAIN ANDREWS

A prominent pet adoption agency has slammed Qantas' animal flight policy claiming it will lead to the unnecessary deaths of hundreds of animals.

Over the past year, animal adoption agency Saving Animals From Euthanasia's regional branches in Broome, Newman, Hedland and Karratha collectively rescued 1826 animals with 52.8 per cent or 950 of them requiring air transport to get to their new homes.

But with Qantas now enforcing a "no-fly" policy for animals when temperatures are forecast to reach more than 35C SAFE founder Sue Hedley said rescue animals that required air transport might have to be destroyed.

"It is crucial to recognise that this policy alteration could have dire consequences for these animals. If they are unable to reach their destination and find new homes, they may tragically face euthanasia as an alternative," she said.

Ms Hedley said SAFE had engaged with Qantas to try to find alternative solutions such as waivers or only allowing animals on early morning flights on days over 35C but was knocked back by the company.

"In over 20 years of operation, SAFE has never had a death during transportation from regional areas to Perth, no matter the temperature," she said.

"Unfortunately, we have been advised that the policy will remain and that no exceptions will be made.

Sue Hedley & Salem. Pic: Helen Osler

"We firmly believe that the risks associated with this policy extend far beyond those related to flying on a day when temperatures may reach 35C later in the day."

A Karratha woman, who only wishes to be identified as Simone, was told her two dogs would not be allowed to catch a Qantas flight on October 5 because of the policy.

According to Simone, at the last minute she was told her dogs could not catch the flight despite being told the night before her dog would be able to fly.

"It's ridiculous we're here with our dogs everything's packed, and we're going away as well.

"With the way things are in Karratha with the shortage of space available there's no one to look after our pets," she said

"It's not just inconvenient, it's unethical as they're not even adhering to their own policy.

Simone's dogs faced being bumped off a Qantas flight because of the airline's heat policy.

"I get it's about animal safety but what is ridiculous is that the policy clearly states 35C and above and it (was) only 25C."

Qantas eventually made an exception for Simone and her dogs on the day, however, she claims she was told by those at the airport to not tell Ms Hedley about the incident.

Last year, temperatures in Karratha exceeded 35C on 108 days, with a consecutive period of 42 days over 35C between February 12 and March 26.

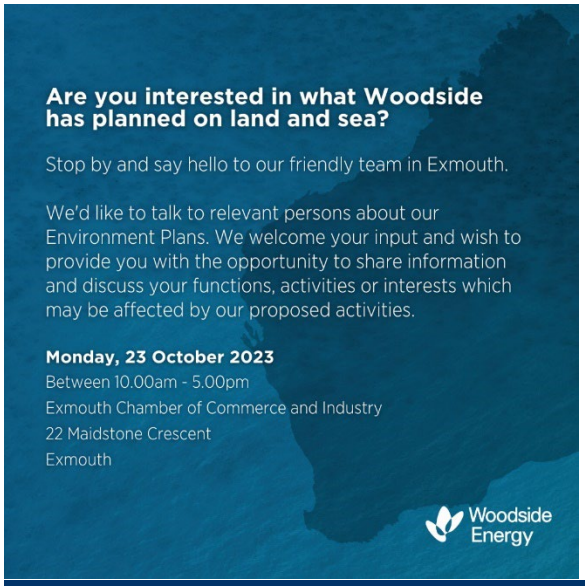
Responding to questions about the policy, a Qantas spokesperson said the policy was led by the International Pet and Animal Association and the International Air Transport Association."Qantas takes the safety and welfare of pets and animals who travel with us extremely seriously," the spokesperson said.

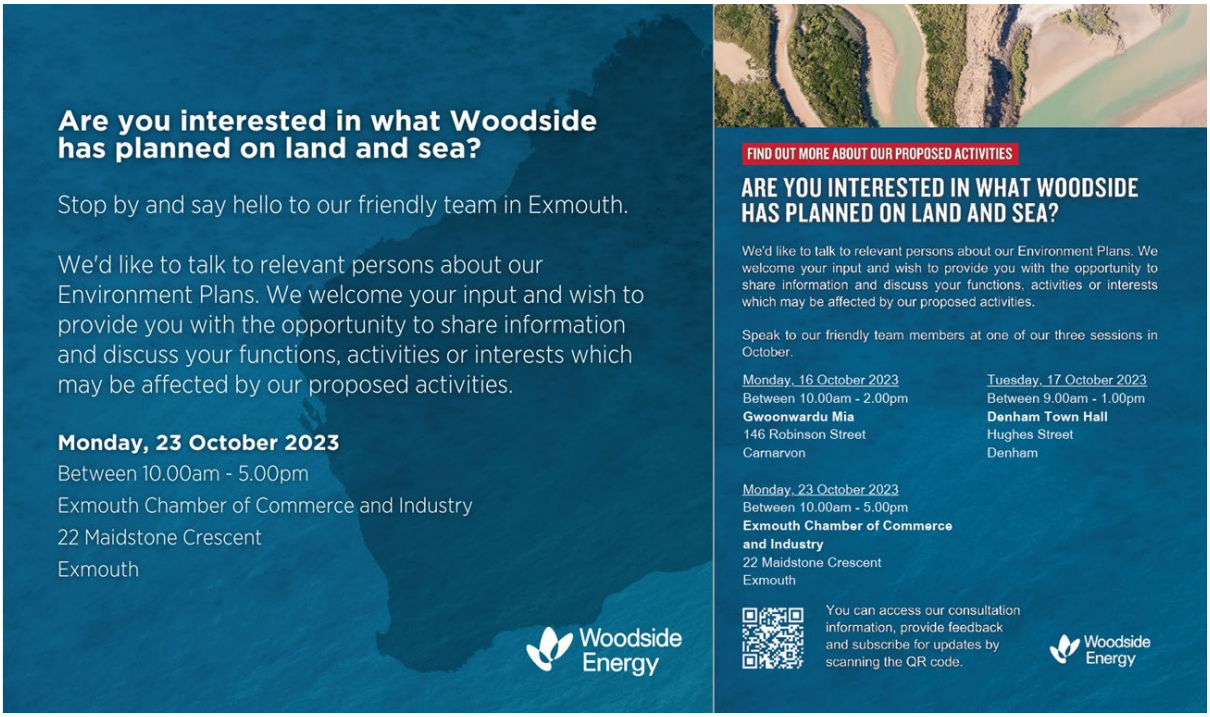
"This is why we don't transport pets when temperatures exceed 35C or fall below 5C, due to the stress and anxiety this could cause."

2.31.4 Exmouth Community Information Sessions (23 October 2023)

Location	**Exmouth**
Date	23 October 2023
Description of the consultation	Woodside hosted a community consultation session in Exmouth to enable community members to understand Woodside's proposed activities and how it may affect them, ask questions, and provide their feedback. Woodside Project, Corporate Affairs, First Nations, Environment, and Biodiversity and Science representatives were available to answer questions. A number of Environment Plan Consultation Information Sheets were available to attendees including the Macedon Operations Commonwealth EP Information Sheet.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in the Pilbara News on 11 October 2023 (**Record of Consultation, reference 2.31.3.2**). • Geotargeted social media campaign advertising in Exmouth and surrounding areas (+80 kms) from 2 to 9 October 2023 (**Record of Consultation, reference 2.31.3.1**). • Directly inviting local Traditional Custodian groups. • An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website) was displayed at Woodside's stand along with current EP factsheets.
Estimated number of individuals / organisations consulted	Exmouth – 2 (Exmouth Chamber of Commerce and Industry) Four individuals attended the information session. One from Gascoyne Green Energy, two Shire Councillors and a representative from Exmouth's Chamber of Commerce and Industry.
Summary of Feedback, Objection or Claim	
Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions, and provide their feedback. • All stakeholders expressed they had seen the geotargeted ads on social media. • General interest in Woodside activities and interest in the social benefits to the local Exmouth community. This included encouragement for Woodside to promote and share the positive outcomes of Woodside's presence and an offer from the Chamber to share information amongst its members. • General interest to understand what is involved in a marine seismic survey (MSS). Woodside presented its video on MSS. • General interest to understand the interaction of whales and MSS, and what mitigation measures are put in place for our activities. • Interest to understand how Woodside undertakes community consultation	
Assessment of Merits of Feedback, Objection or Claim and Woodside's Response	
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification, and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see **Section 5.2** of the EP).	

2.31.4.1 Social media tile and story (2 – 9 October 2023)





2.31.4.2 Pilbara News Advertisement (11 October 2023)

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Wednesday, October 11, 2023
pilbaranews.com.au

Animal flight policy criticised

CAIN ANDREWS

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Over the past year, animal adoption agency Saving Animals From Euthanasia's regional branches in Broome, Newman, Hedland and Karratha collectively rescued 1826 animals with 62.8 per cent or 950 of them requiring air transport to get to their new homes.

But with Qantas now enforcing a "no-fly" policy for animals when temperatures are forecast to reach more than 35C SAFE founder Sue Hedley said rescue animals that required air transport might have to be destroyed.

"It is crucial to recognise that this policy alteration could have dire consequences for these animals. If they are unable to reach their destination and find new homes, they may tragically face euthanasia as an alternative," she said.

Ms Hedley said SAFE had engaged with Qantas to try to find alternative solutions such as waivers or only allowing animals on early morning flights on days over 35C but was knocked back by the company.

"In over 20 years of operation, SAFE has never had a death during transportation from regional areas to Perth, no matter the temperature," she said.

"Unfortunately, we have been advised that the policy will remain and that no exceptions will be made.

Sue Hedley & Salem. Pic: Helen Osler

"We firmly believe that the risks associated with this policy extend far beyond those related to flying on a day when temperatures may reach 35C later in the day."

A Karratha woman, who only wishes to be identified as Simone, was told her two dogs would not be allowed to catch a Qantas flight on October 5 because of the policy.

According to Simone, at the last minute she was told her dogs could not catch the flight despite being told the night before her dog would be able to fly.

"It's ridiculous we're here with our dogs everything's packed, and we're going away as well.

"With the way things are in Karratha with the shortage of space available there's no one to look after our pets," she said

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Simone's dogs faced being bumped off a Qantas flight because of the airline's heat policy.

"I get it's about animal safety but what is ridiculous is that the policy clearly states 35C and above and it (was) only 23C."

Qantas eventually made an exception for Simone and her dogs on the day, however, she claims she was told by those at the airport to not tell Ms Hedley about the incident.

Last year, temperatures in Karratha exceeded 35C on 108 days, with a consecutive period of 42 days over 35C between February 12 and March 26.

Responding to questions about the policy, a Qantas spokesperson said the policy was led by the International Pet and Animal Association and the International Air Transport Association."Qantas takes the safety and welfare of pets and animals who travel with us extremely seriously," the spokesperson said.

"This is why we don't transport pets when temperatures exceed 35C or fall below 5C, due to the stress and anxiety this could cause."

2.32 Email sent to Chevron Australia, Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon (12 July 2023)

Dear Chevron

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
- State - Pipeline Licences TPL/23 (State waters), PL 88 (wet gas pipeline onshore) and PL 87 (dry gas pipeline onshore). The Macedon Gas Plant is located onshore approximately 17 km south-west of Onslow and is covered under separate approvals.

The EPs are being revised and resubmitted for the continued production of gas from the Macedon gas field, located in Commonwealth waters. Production is via four subsea wells and associated subsea infrastructure, with transport of the gas to an onshore processing plant via a subsea pipeline traversing State waters and extending onshore to the Macedon Gas Plant. From the Gas Plant, gas is then piped to the Dampier to Bunbury Natural Gas Pipeline.

Activity overview
Woodside plans to undertake the following activities during the next five-year period including routine production and operations; routine inspection, monitoring, maintenance, and repair (IMMR) activities of the:

- Four subsea wells (with potential for fifth)
- Two non-producing wells with wellheads
- Pipeline extending from the production wells offshore to the onshore Macedon Gas Plant then from the Plant to the Dampier to Bunbury Natural Gas Pipeline.

Woodside also plans to continue to undertake terrestrial rehabilitation and remediation activities associated with the Onshore Wet Gas and Dry Sales Gas Pipelines. The EPs also include non-routine activities and unplanned incidents associated with the above.

The drilling and installation associated with the potential fifth well will be the subject of a separate EP.
An updated Consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.
We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has published a brochure entitled *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards

2.33 Email sent to Shire of Exmouth (12 July 2023)

Dear [Individual 22]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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understand consultation requirements for Commonwealth EPs and how to participate in consultation.

If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.34 Email sent Exmouth Community Liaison Group (12 July 2023)

Dear Exmouth Community Liaison Group

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.35 Email sent to Shire of Carnarvon (12 July 2023)

Dear [Individual 23]

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

- Commonwealth - Production Licence area WA-42-L and pipeline licence WA-23-PL, approximately 40 km north of Exmouth and 100 km west of Onslow, Western Australia; and
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If you have feedback specific to the proposed activities described under the proposed EP, we would welcome your feedback at Feedback@woodside.com.au or 1800 442 977 by **28 July 2023**.

Regards,

Woodside Feedback

2.36 Email sent to Carnarvon Chamber of Commerce and Industry (12 July 2023)

Dear Carnarvon Chamber of Commerce and Industry

Woodside previously consulted you (email below) on its plans to submit a five (5) year revision of the Macedon Operations Commonwealth and State Environment Plans (EPs) (previously operated by BHP Petroleum Pty Ltd) in:

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Regards,

Woodside Feedback

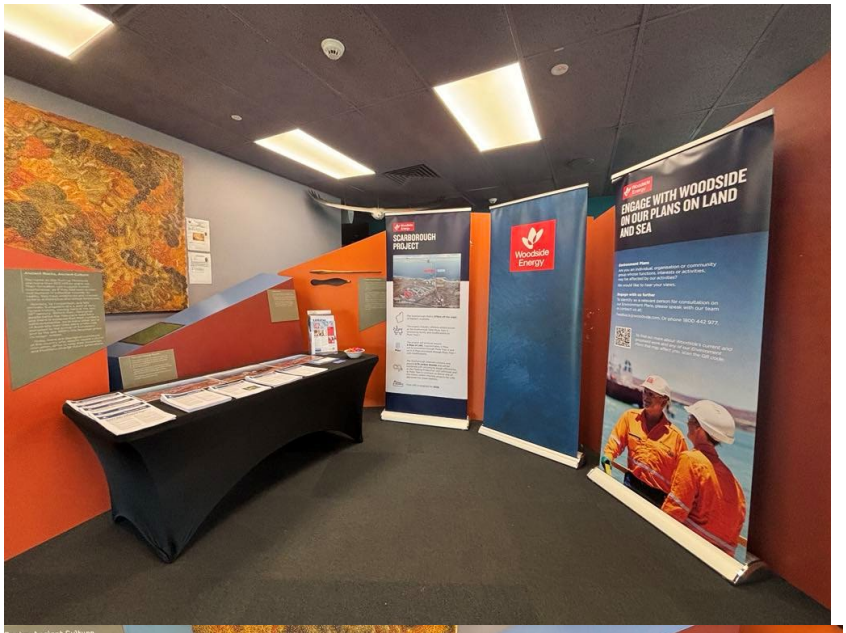
2.37 Community Information Sessions (2024)

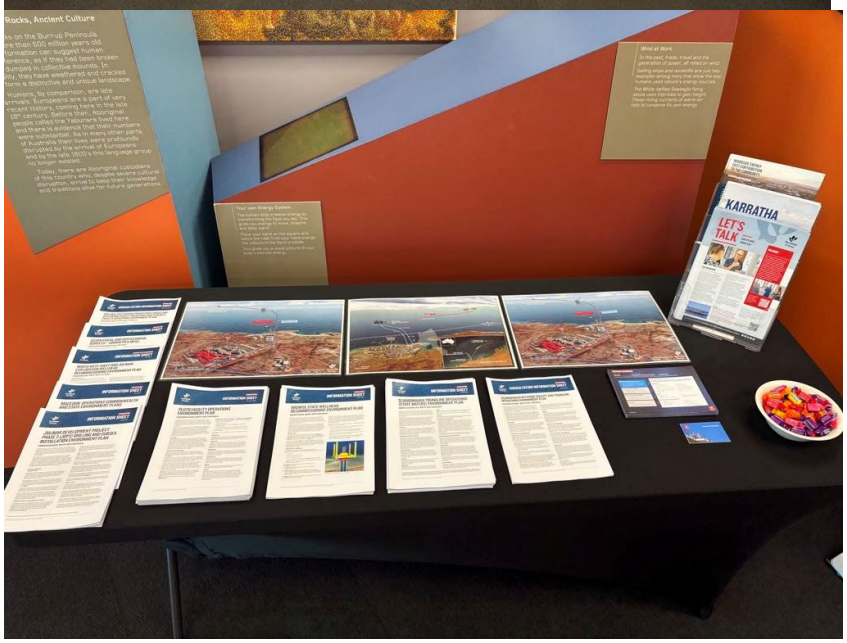
2.37.1 North West Shelf Visitor Centre (3 and 10 April 2024)

Location	**North West Shelf Visitor Centre**
Activity	Community information sessions
Location	North West Shelf Visitor Centre
Date	3 April 2024 and 10 April 2024
Description of the consultation	Woodside hosted community consultation at the North West Shelf Visitor to enable community members to understand Woodside's proposed activities and how it may affect them, ask questions, and provide their feedback. Woodside Corporate Affairs representatives were available to answer questions. A number of Environment Plan Consultation Information Sheets were available to attendees including this EP.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Social - organic • An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website), Scarborough Project banner were displayed stand along with current EP factsheets.

Estimated number of individuals / organisations consulted	Woodside spoke to many community members, recording 7 meaningful conversations. 3 April – 17 community / public visitors 10 April – 23 community / public visitors
Summary of Feedback, Objection or Claim	
• General queries about gas production by Woodside operated Karratha Gas Plant. • Environment Plan awareness building with multiple conversations on "What is an Environment Plan?" and "What is an EMBA?". • Awareness of the Scarborough Energy Project with queries around location of the FPU, exclusion zones and impacts to marine life.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification, and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see **Section 5.2**).	

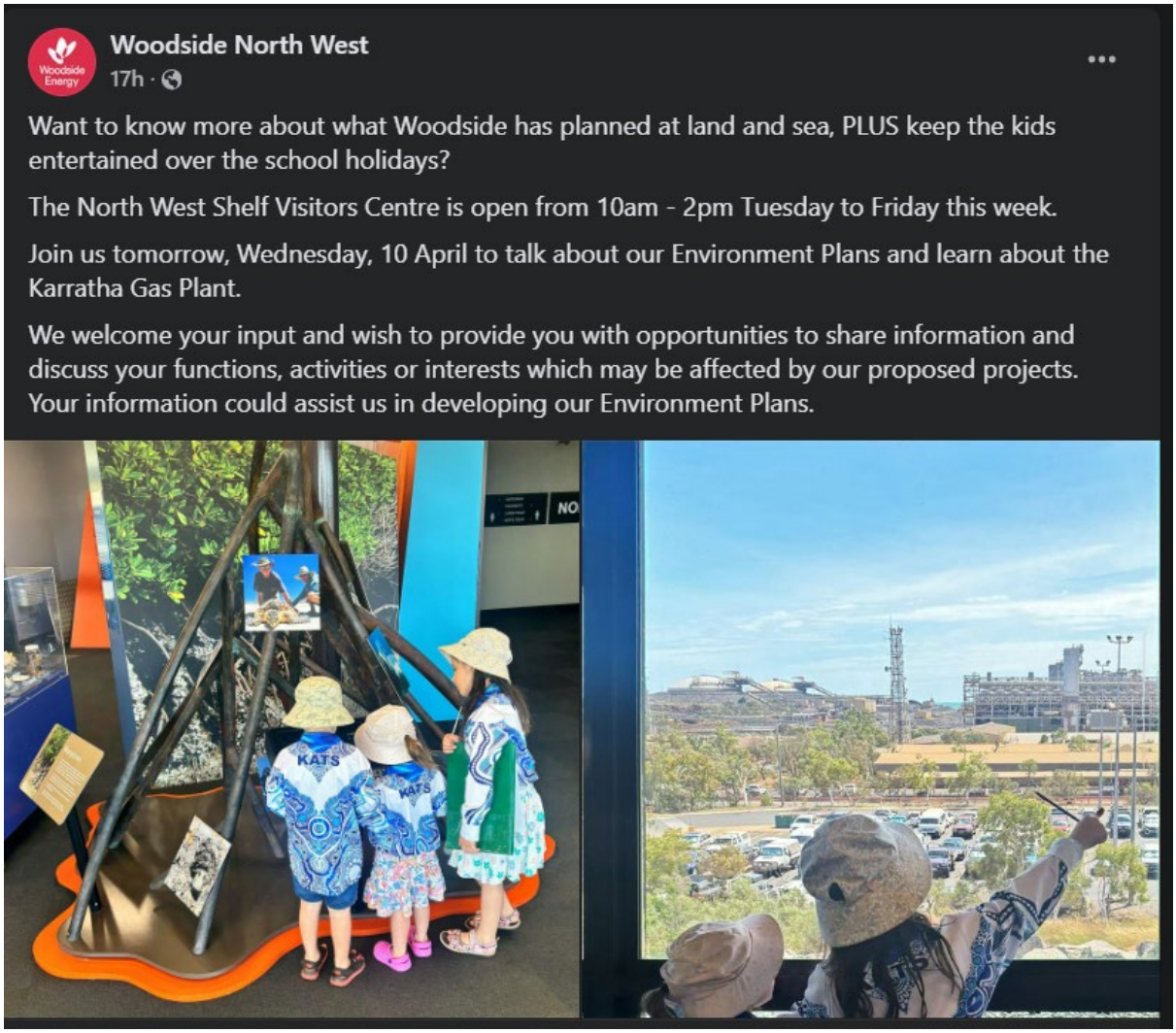
North West Shelf Visitor Centre pop-up – 3 April 2024





Facebook North West post – 30 March 2024

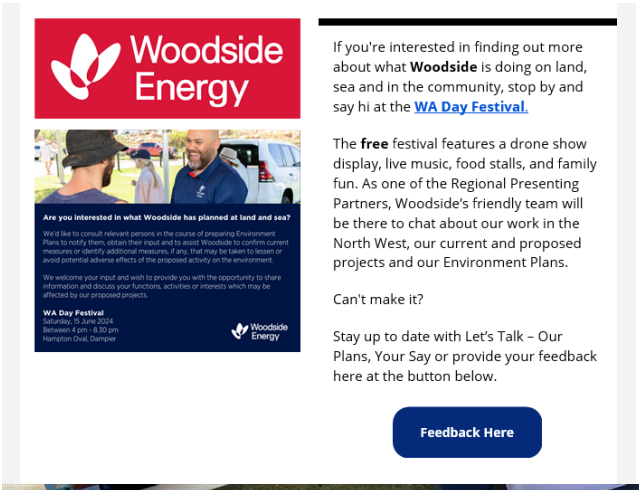
9 April 2023 – Facebook North West post

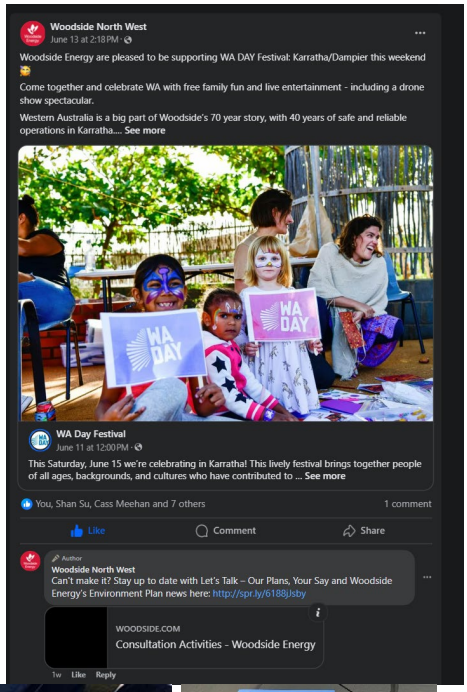


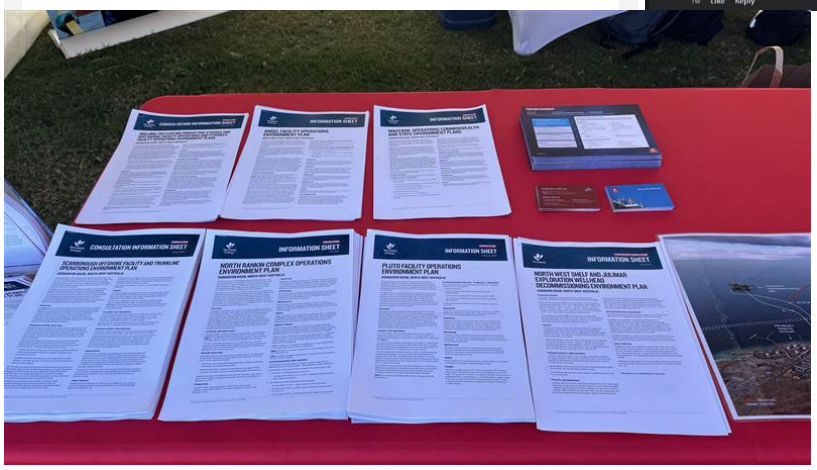
2.37.2 WA Day Festival (15 June 2024)

Location	**Dampier**
Activity	WA Day Festival
Date	15 June 2024
Description of the consultation	Woodside hosted a stand at the WA Day Festival organised by Celebrate WA. The event featured a drone show, food stalls, live music, sideshow stalls and interactive exhibits. The stand was staffed by members from Woodside's Corporate Affairs, First Nations and Environment team. Woodside displayed a QR code on the stand, linked to the consultation activities page of the Woodside website. Woodside made available printed consultation information sheets for this EP.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Advertisement in the KDCCI e-newsletter distributed 5 June 2024 (**Appendix F, reference 2.37.2**).

	• Social media posts were published inviting public to attend on Woodside North West Facebook page (**Appendix F, reference 2.37.2**). • Celebrate WA advertised the event via TV commercials, radio advertisement and in print. • An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website), and Scarborough Project banner were displayed at Woodside's stand along with current EP factsheets.
Estimated number of individuals / organisations consulted	Over 2000 community members (Celebrate WA) attended the event. Woodside spoke to many community members, recording 15 meaningful conversations.
Summary of Feedback, Objection or Claim	
• General queries around employment and volunteer opportunities. • General positive commentary from community members working at Woodside or on Woodside projects. • General interest in Scarborough and Browse progress and the future of gas in the energy transition. • General query around tax contributions. • EP approval process discussed and why we want to talk to community. No concerns raised.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification, and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see **Section 5.2**).	



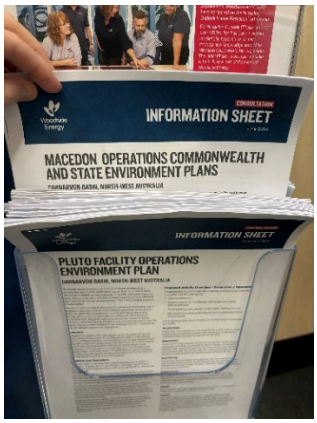




2.37.3 Pilbara Summit (25-26 June 2024)

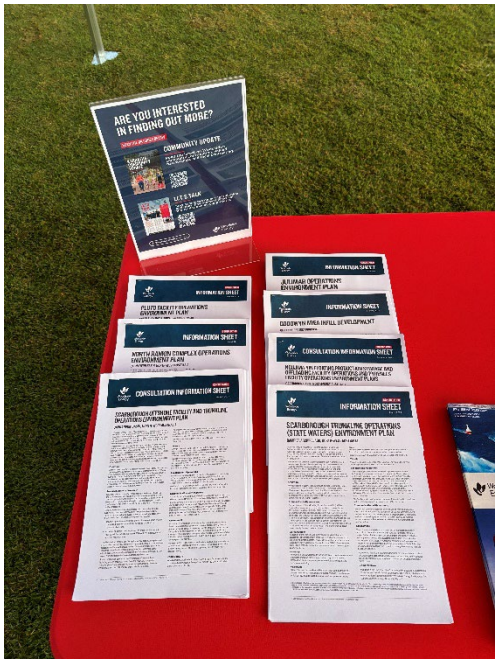
Location	**Karratha**
Activity	Pilbara Summit 2024
Date	25-26 June 2024
Description of the consultation	Woodside hosted a stand at Pilbara Summit 2024 (**Record of Consultation, reference X)**, a sold-out conference established to raise the profile of issues and opportunities in the Pilbara region. The event provides the opportunity for the Pilbara region's industry, investors, businesses, community, and government representatives to connect. The stand was staffed by members from Woodside's Corporate Affairs, Government Affairs, First Nations, Supply Chain and New Energy teams. Woodside displayed a QR code on the stand, linked to the Let's Talk EP newsletter on the Woodside consultation page of the website. A pull-up banner was on display focusing on engagement on our plans at land and sea with a QR code to the consultation page on the Woodside website. Woodside made available printed consultation information sheets for this EP.
Advertising and invitations	No advertising was undertaken. The Vice President for North West Shelf delivered a speech during the conference, which highlighted the important role the that Woodside will continue to play in the energy transition. In addition a presentative from Woodside's CCS team was part of a panel discussion on

	Decarbonisation – moving to net zero discussing the role of CCS, opportunities for growth, new business and the best approach to renewable and lower carbon industries. Attendees were invited to find out more about Woodside's projects, developments or environment plans by speaking team members on the Woodside conference stand or to visit Woodside's town office based in The Quarter.
Estimated number of individuals / organisations consulted	Over 600 people attended in person event over 2 days
Summary of Feedback, Objection or Claim • Approximately 10 conversations occurred around new energy opportunities and plans, local content, social investment, EMBAs (relating to EPs) and approvals in general. • No feedback was received regarding Woodside's Environment Plans.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
This session forms part of Woodside's broader consultation approach to enable self-identification, and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see **Section 5.2** of the EP).	

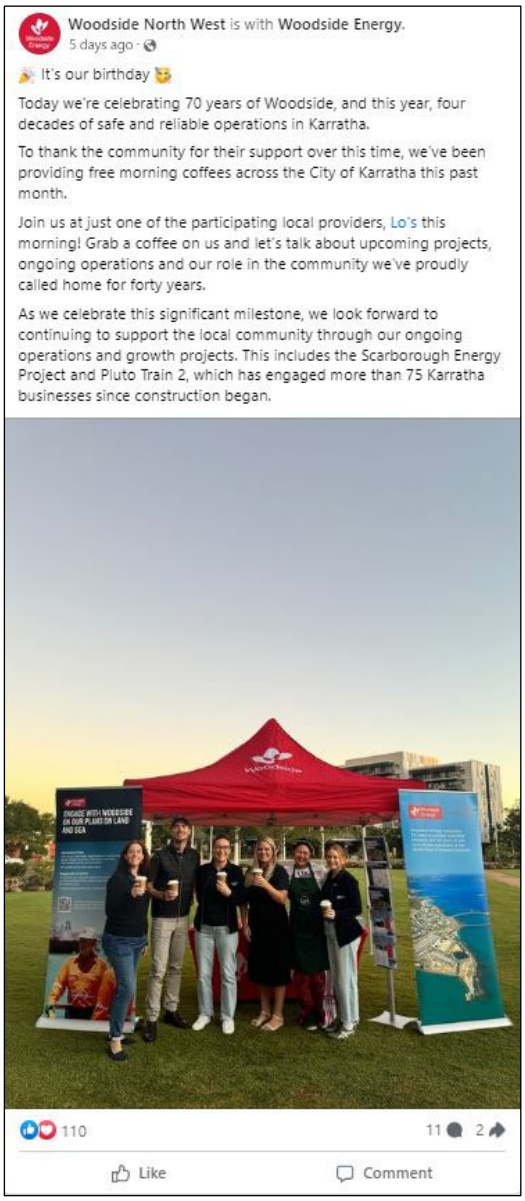


2.37.4 Community pop-up at Lo's Cafe (26 July 2024)

Location	Karratha
Activity	Community pop-up at Lo's Cafe
Date	26 July 2024
Description of the consultation	Woodside hosted a stand in the community to coincide with Woodside's 70th birthday and 40 years of safe operations in Karratha. Members of Woodside's Corporate Affairs team actively engaged with the community to discuss proposed Environment Plan activities and general community engagement discussion. Woodside displayed a QR code on the stand, linked to the Let's Talk EP newsletter on the Woodside consultation page of the website. A pull-up banner was on display focusing on engagement on our plans at land and sea with a QR code to the consultation page on the Woodside website. Woodside made available printed consultation information sheets for this EP.
Advertising and invitations	Woodside advertised this engagement on social media only. • Social media post was advertised on Woodside North West Facebook page on 26 July 2024 An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website)was displayed at Woodside's stand along with current EP factsheets.
Estimated number of individuals / organisations consulted	Over 60 community members attended the event. Woodside spoke to many community members, recording 10 meaningful conversations.
Summary of Feedback, Objection or Claim • Approximately 10 conversations occurred around employment opportunities and pathways, social investment, the Environment Plan process and approvals in general. • No feedback was received regarding Woodside's Environment Plans.	
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	
This session forms part of Woodside's broader consultation approach to enable self-identification, and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see **Section 5.2** of the EP).	



Social media post on Woodside North West Facebook



2.37.5 FeNaCING Festival (3 to 4 August 2024)

Location	**Karratha**
Activity	FeNaCING Festival
Date	3-4 August 2024
Description of the consultation	Woodside hosted a stand at the FeNaCING Festival 2024. Members of Woodside's Corporate Affairs, Environment and Operations teams actively engaged with the community to discuss proposed Environment Plan activities. Woodside displayed a QR code on the stand, linked to the Let's Talk EP newsletter on the Woodside consultation page of the website. A pull-up banner was on display focusing on engagement on our plans at land and sea with a QR code to the consultation page on the Woodside website. Woodside made available printed consultation information sheets for this EP.
Advertising and invitations	Woodside advertised the sessions to enable individuals to self-identify, become aware of the community consultation, and enable individuals to provide feedback on proposed activities, through the following: • Social media post was advertised on the City of Karratha and FeNaCING Festival Facebook page on 18 July 2024. • Social media post was advertised on the Woodside North West Facebook page. • FeNaCING Festival lift-out in the Pilbara News on 31 July 2024. An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website) was on display outside the Woodside Marquee, and EP factsheets were displayed, and provided in the Woodside Marquee.
Estimated number of individuals / organisations consulted	Over 10 000 community members (City of Karratha) attended the event. Woodside spoke to many community members, recording 30 meaningful conversations.

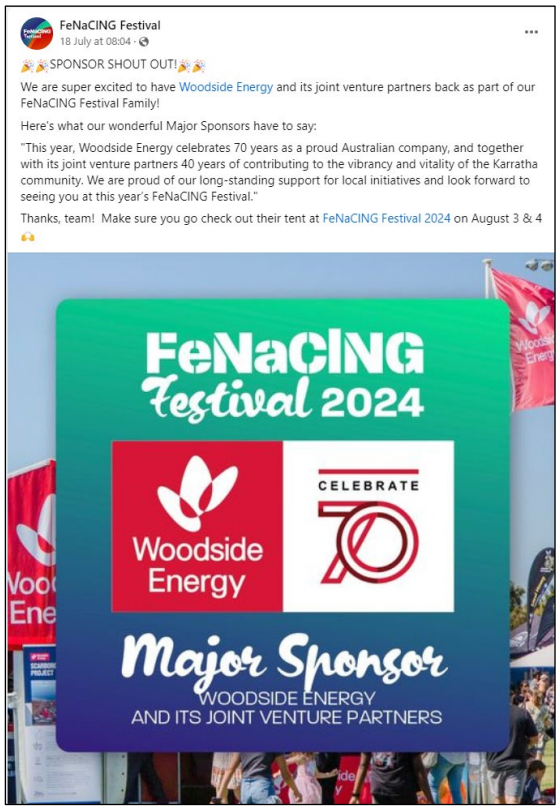
Summary of Feedback, Objection or Claim

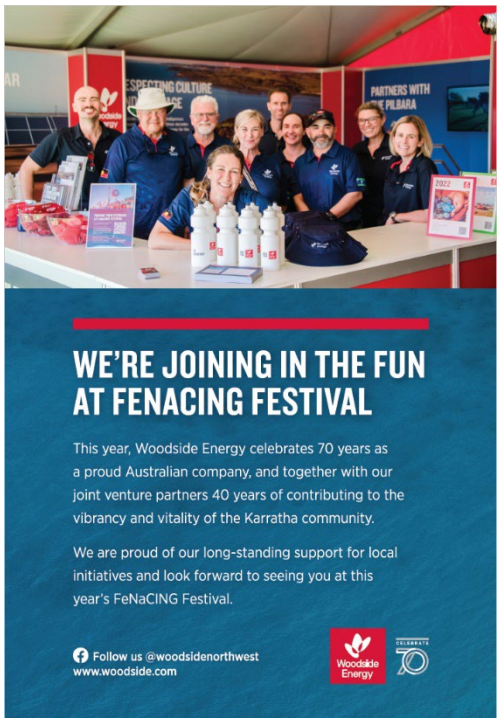
- Approximately 10 conversations occurred around new energy opportunities and plans.
- Other conversations included:
  - Local content
  - Social investment
  - General understanding of an EMBA
  - Approvals status for Browse and Scarborough
  - The future of the Karratha Gas Plant assets future
  - How oil and gas is produced
  - Tax and royalties.
- No feedback was received regarding specific Environment Plans.

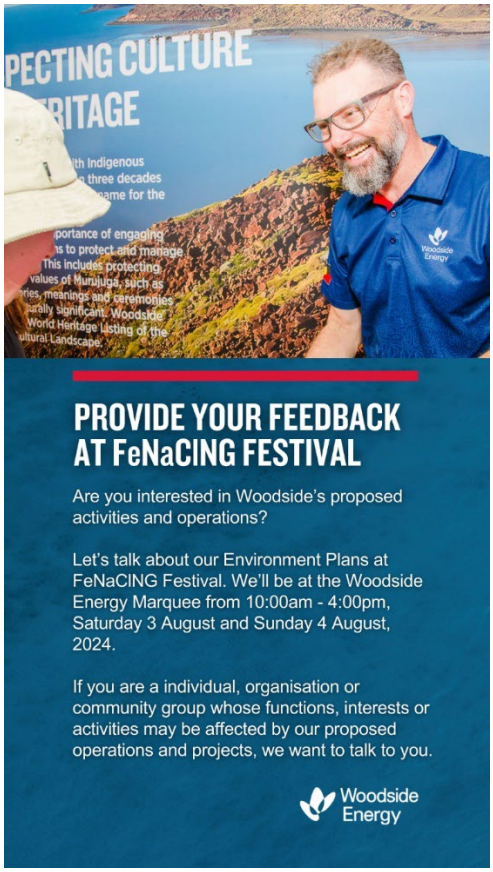
Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response

Woodside's participation at FeNaCING forms part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see **Section 5.2** of the EP).

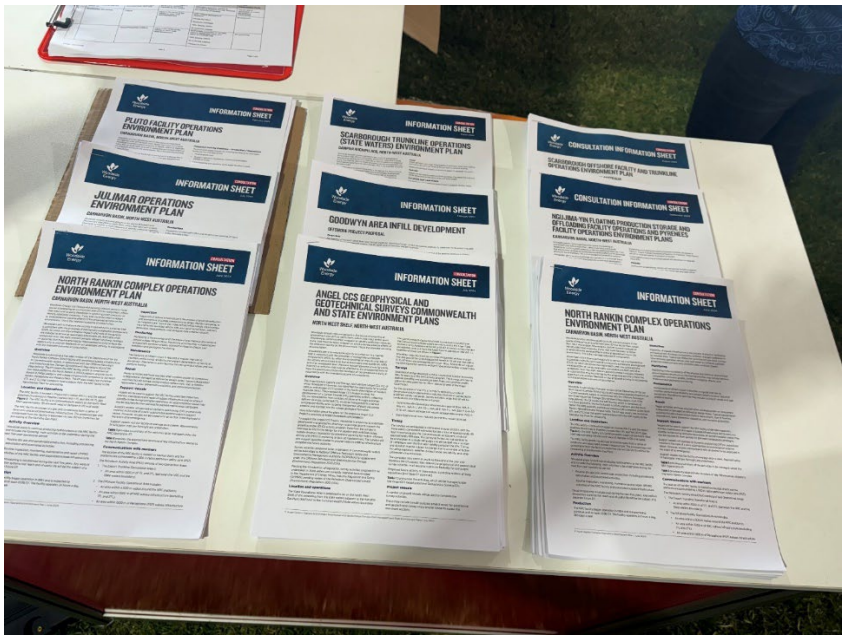
City of Karratha managed FeNaCING Festival FaceBook page – 18 July 2024







Banner on display at Woodside Marquee – FeNaCING Festival



Woodside Marquee – FeNaCING Festival

21. APPENDIX G PROGRAM OF ONGOING ENGAGEMENT WITH TRADITIONAL CUSTODIANS

Proposed Program of Ongoing Engagement with Traditional Custodians

This Program of Ongoing Engagement with Traditional Custodians ("Program") has been developed to demonstrate Woodside's commitment to ongoing engagement and support of Traditional Custodians' capacity to care for and manage Country, including Sea Country, and has been directly informed by Traditional Custodians' feedback regarding their capacity to engage and consult on Environment Plans.

It is a living document designed to evolve with ongoing consultation and feedback from Traditional Custodians and, at a minimum, will be subject to annual review. In addition to this Program, Woodside will continue to participate in, and support collective industry engagement with Traditional Owners on the development of a future, sustainable, industry wide Program. Through the Program, Woodside actively supports Traditional Custodians' capacity for, and involvement in, ongoing engagement and feedback on environment plans.

The Program has been developed so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the possible consequences of an activity to be carried out under an environment plan on their functions, interests and activities as they relate to cultural values. This feedback will be evaluated in conjunction with Traditional Custodians and, where necessary, avoidance or mitigation strategies in will be developed in collaboration with Traditional Custodians.

The Program enables Woodside to manage uncertainty on the impacts and risks to cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians.

How the Program is implemented with specific Traditional Custodians will depend on their stated needs and priorities

The Program is underpinned by Woodside's First Nations Communities Policy (woodside.com), the objective of which is to ensure Woodside partners and engages with First Nations communities to create positive economic, social and cultural outcomes that leave a lasting legacy. Woodside does this through building respectful relationships and partnerships with First Nations communities where we are active, in the areas where they are most interested in. We acknowledge the unique connection that First Nations communities have to land, waters and the environment. .

The Program will include, as agreed with relevant communities, reasonable commitment to:

1. **Support for ongoing dialogue and engagement**

Woodside will support the capacity of Traditional Custodians to participate in ongoing dialogue and engagement about the environment plans and to enable the ongoing identification of cultural values potentially impacted by Woodside's activities. Woodside further commits to agreeing consultation protocols with individual Traditional Custodians to ensure the material provided is appropriate in level of detail such that the potential for cultural impact from Woodside activities can be determined and as required measures can be adopted to avoid or minimise impact.

In addition, Woodside will receive feedback on cultural values from an individual person or organisation that identifies as a Traditional Custodian, at any stage during the development and implementation of activities. This feedback will be evaluated, in conjunction with the Traditional Custodian individual or group and if required, control measures will put in place to avoid impacts to cultural values, or where avoidance is not possible, to minimise and mitigate the impacts to an acceptable level.

Where cultural values are identified post activity completion, any controls relevant to value management will be implemented during the next relevant activity.

2. Support for the identification and recording of cultural features

Woodside will support Traditional Custodians to record and articulate their Sea Country values and will invest in cultural assessments codesigned with Traditional Custodians, where required, to inform potential risks to cultural values from our petroleum activities.

This may include supporting cultural mapping by Traditional Custodians to identify and map significant cultural features including archaeological sites and other cultural values. The scoping of the mapping process will be codesigned with Traditional Custodians.

Woodside understands that cultural knowledge remains the intellectual property of Traditional Custodians and will agree with Traditional Custodians at the outset how that information from surveys will be used to feedback into and inform the environment plan's design and implementation.

In addition, Woodside applies the Cultural Heritage Management Procedure 2019, updated in 2023, to the Program which*:*

- provides a process for the identification, protection, and management of Cultural Heritage taking into account relevant standards, in particular, the United Nations Declaration on the Rights of Indigenous Peoples, the Charter for the Protection and Management of the Archaeological Heritage, the Convention for the Safeguarding of the Intangible Cultural Heritage, and the Convention on the Protection of the Underwater Cultural Heritage;
- applies to underwater cultural heritage and, consistent with current practice, provides for the commissioning of (where appropriate) both archaeological and ethnographic assessments of cultural values over the submerged landscape; and
- the process includes the following:
    - early engagement with relevant Traditional Custodians
    - identification of potential heritage, this could include desktop and field surveys undertaken with the Traditional Custodians.
- the development of cultural management strategies; and, where it is determined cultural heritage may be impacted, the development of Cultural Heritage Management Plans codesigned with Traditional Custodians and implemented by Woodside's First Nations team which:
    - focus on avoidance or minimisation of impacts; and
    - provide regular reviews and for inclusion of new information and further development of the Cultural Heritage Management Plan.

Woodside is committed to continue to receive feedback on cultural values for the life of an environment plan, the inclusion of new information and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians. This information will be recorded via the Woodside Management of Knowledge Process and any potential impacts to the accepted Environment Plan evaluated via the Woodside Management of Change Process.

3. Building capacity for the ongoing protection of country

Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups. This is guided by Woodside's Indigenous Affairs Strategy 2019 ("Strategy"), which is designed to enable the building and maintaining of relationships with Traditional Custodians to leave a lasting legacy, including strengthening of Traditional Custodians' capacity to care for and manage Country, including Sea Country. The Strategy was developed with inputs from Traditional Custodians and contains four pillars that direct Woodside's social investment, policies relating to economic development, procurement and employment, and Woodside's agreement making and implementation of agreements. The pillars are:

1. Culture and Heritage Management: support social outcomes through protection, recognition and respect for culture and heritage;
2. Economic Participation: provide training, jobs, and business opportunities;

3. Capability and capacity: ensure strong corporate governance, leadership development and education initiatives to support self-determination; and
4. Safer and Healthier Communities: partner with Aboriginal people and service providers to maximise safer and healthier community outcomes.

Woodside is committed to an ongoing relationship between Woodside and the Traditional Custodian groups. Through consultation with Traditional Custodians Woodside will continue to:

- establish support for Indigenous ranger programs via social investment;
- establish support for Indigenous oil spill response capability via investigating training models;
- establish support for identification and recording of cultural values and the management of that information by Traditional Custodians;
- establish support for programs identified by the Traditional Custodians as important to them and as agreed by Woodside.

4. Support for capacity and capability in relation to governance

Pillar 3 of the Indigenous Affairs Strategy 2019 focuses on ensuring strong corporate governance, leadership development and education initiatives to support self-determination. To enable this, Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups, including in relation to governance and management systems.

The nature of this support will be informed by the individual needs of Traditional Custodian groups, but may include:

- funding or other support for community meetings, particularly where consultation with representative bodies lies outside of that body's core business and cultural authority or mandate needs to be secured,
- resourcing internal expertise so that information is managed consistently and internally, including ensuring appropriate record keeping of consultation to provide stakeholders with a lasting record of discussions, and
- development or upgrade of IT systems to manage information.

Program Reporting and Review of Effectiveness

Woodside will undertake an annual review of the Program to assess its effectiveness and adapt the Program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.
Progress of the Program will be reported annually in line with annual sustainability reporting via the Woodside website.

A commitment to the Program will be included in all new and revised Environment Plans in the format below:

Environmental Performance Outcome	Environmental Performance standards	Measurement Criteria
EPO 1 Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values	**Applicable to all EPs:** **EPS 1.1** Implement a program, which is compliant with Corporate Woodside Policies Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities Program. The Program will include, where 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 O&G industry on activities • Development of ongoing relationships with Traditional Custodian groups • Any other initiatives proposed for the purpose of protecting country including cultural values • 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 document through the Woodside's Management of Change and Management of Knowledge	**MC1.1** Records demonstrate discussions with relevant Traditional Custodian Groups on proposed partnerships and/or initiatives initiated by Woodside, and responses to feedback provided by Woodside within 4 weeks **MC 1.2** Progress of the Program will be reported in line with annual sustainability reporting via the Woodside website. **MC 1.3** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified
	EPS 1.2 Undertake an annual review of the program to determine its effectiveness and adapt the program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.	**MC 1.4** Records demonstrate an annual review of the Program has been undertaken

22. APPENDIX H OIL SPILL PREPAREDNESS AND RESPONSE STRATEGY SELECTION AND EVALUATION

Oil Spill Preparedness and Response Mitigation Assessment for Macedon Operations (Cwth)

Corporate HSE

Hydrocarbon Spill Preparedness

May 2024
Revision 0b

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FIGURES

TABLES

EXECUTIVE SUMMARY

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Macedon Operations (Cwth) Environment Plan, 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.

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 Acceptable levels. 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 (CS-01): Instantaneous surface release of Marine Diesel Oil (MDO) at the Macedon Well Centre.** Lat: 21° 34' 17.46" S, Long: 114°11' 47.008" E Instantaneous release of 125 m^3 of MDO. 5% residual component of 6.25 m^3	Section 2.2
Other Credible Scenario	**Credible Scenario-02 (CS-02): Loss of well containment from Macedon-7 well due to loss of Xmas tree and subsurface safety valve ability to emergency close** Lat: 21° 33' 50.80" S, Long: 114° 13' 24.17" E Dry gas release over 69 days – no liquid hydrocarbon is expected at atmospheric temperatures.	
Hydrocarbon Properties	**MDO** MDO contains a low proportion (~5% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. The unweathered mixture has a dynamic viscosity of 4 cP (at 25 C°). 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 < 380 °C); and a further 54% should evaporate over several days (265°C < BP < 380 °C).	Section 6.7 of the EP Appendix A of the First Strike Plan
	Dry gas The Macedon reservoir properties are dry gas, primarily methane (approximately 94%) and nitrogen (approximately 5%). No liquid hydrocarbons are expected at atmospheric conditions.	

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. 200 replicate simulations were completed for the scenarios to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each season.			Section 2.3
		CS- 01: Instantaneous hydrocarbon release of 125 m^3 of MDO	**CS-02: Loss of well containment from Macedon-7 well due to loss of Xmas tree and subsurface safety valve ability to emergency close** Dry gas release – no liquid hydrocarbon.	
	Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (>10 g/m^2)	36 hours to Exmouth Coastline, Ningaloo Coast WH, and Ningaloo Marine Park (State).	N/A – dry gas	
	Minimum time to commencement of oil accumulation at any shoreline receptor (>100 g/m^2)	No contact reached at this threshold.	N/A – dry gas	
	Maximum cumulative oil volume accumulated at any individual shoreline receptor (>100 g/m^2)	No contact reached at this threshold. (3 m^3 at Exmouth Coast (including, Ningaloo Coast WH, and Ningaloo MP (State) below feasible response threshold).	N/A – dry gas	
	Maximum cumulative oil volume accumulated across all shoreline receptors (>100 g/m^2)	No contact reached at this threshold. (3 m^3 at Exmouth Coast (including, Ningaloo Coast WH, and Ningaloo MP (State) below feasible response threshold).	N/A – dry gas	
	Minimum time to entrained/dissolved hydrocarbon contact with the	5 hours to Ningaloo Marine Park and Ningaloo WH waters.	N/A – dry gas	

	offshore edges of any receptor polygon (> 100 ppb)			
Net Environmental Benefit Analysis	Operational monitoring, source control via capping stack, source control via relief well drilling, source control via vessel SOPEP, protection and deflection, and oiled wildlife response are all identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment.			Section 4
ALARP evaluation of selected response techniques	The evaluation of the selected response techniques shows the proposed controls reduced the risk to an ALARP and Acceptable level for the risk presented in Section 2, without the implementation of considered additional, alternative or improved control measures.			Section 7

1 INTRODUCTION

1.1 Overview

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Macedon Operations (Cwth) Environment Plan, 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 2009 (Environment Regulations) relating to hydrocarbon spill response arrangements.

- The Macedon Operations Environment Plan (EP) (Cwth)
- Oil Pollution Emergency Arrangements (OPEA) (Australia)
- The Macedon Oil Pollution Emergency Plan (OPEP) (Cwth) including:
  - First Strike Plan (FSP)
  - Relevant Operations Plans
  - Relevant Tactical Response Plans (TRPs)
  - Relevant Supporting Plans
  - Data Directory.

The purpose of this document is to demonstrate 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 Acceptable levels.

1.3 Scope

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 Acceptable levels. 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 Petroleum Activity Program is shown in Figure 3-1 of the EP.

1.4 Oil spill response document overview

The documents outlined in Table 1-1 and Figure 1-1 are collectively used to manage the preparedness and response for a hydrocarbon release.

The Oil Pollution First Strike Plan (FSP) contains a pre-operational Net Environmental Benefit Analysis (NEBA) summary, outlining the selected response techniques for this PAP. Relevant Operational Plans to be initiated for associated response techniques are identified in the FSP and relevant forms to initiate a response are appended to the FSP.

The process to develop an Incident Action Plan (IAP) begins once the Oil Pollution FSP is underway. The IAP includes inputs from the Operational Monitoring operations and the operational NEBA

(Section 4). Planning, coordination and resource management are initiated by the Incident Management Team (IMT). 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 ensure the response techniques implemented continue to result in a net environmental benefit (Section 4).

The response will continue as described in Section 5 until the response termination criteria have been met.

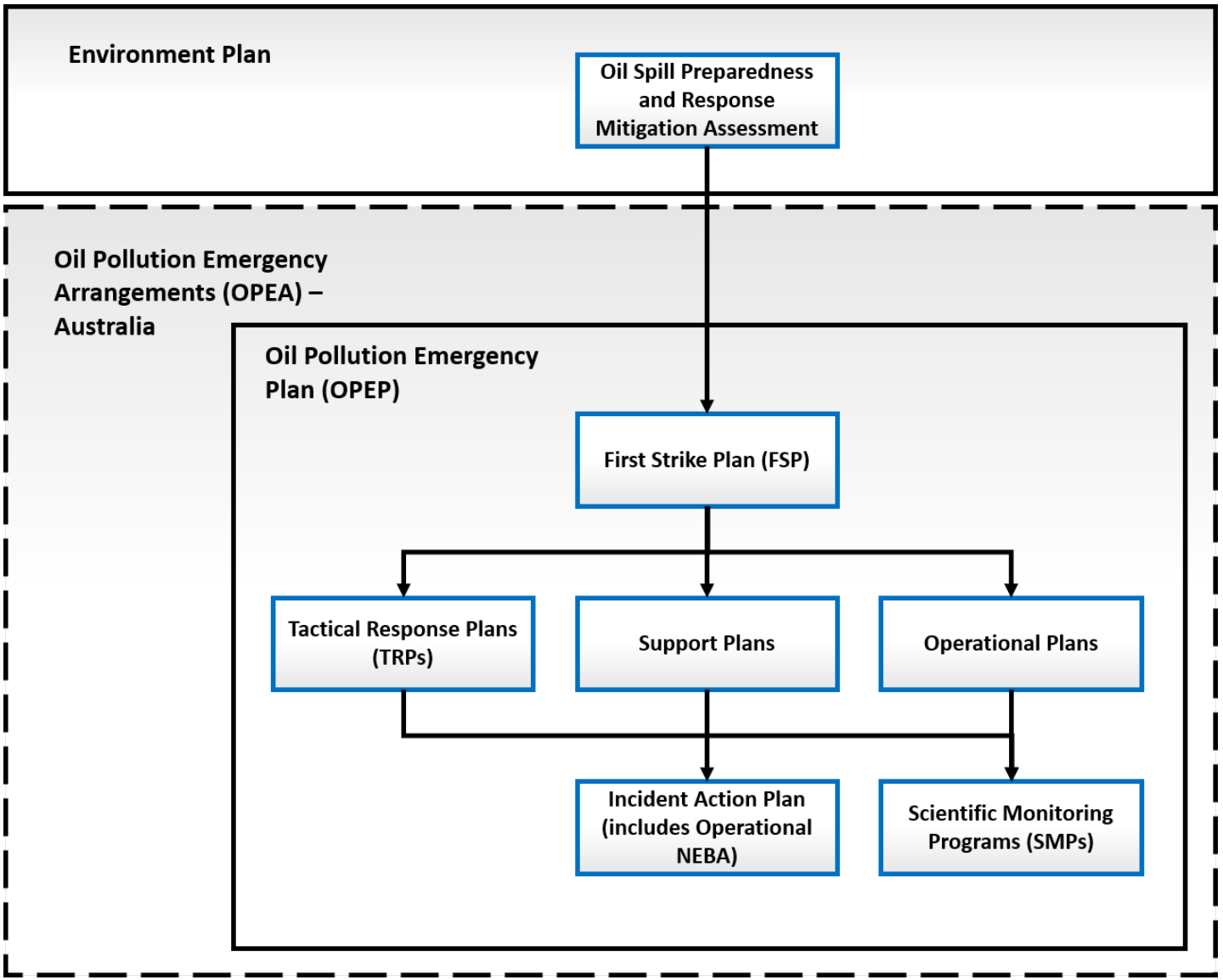

Figure 1-1: Woodside hydrocarbon spill document structure

Table 1-1: Hydrocarbon Spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Macedon Operations Environment Plan (EP) (Cwth)	Demonstrates that potential adverse impacts on the environment associated with the Macedon Operations (during both routine and non-routine operations) are mitigated and managed to As Low As Reasonably Practicable (ALARP) and will be of an acceptable level.	NOPSEMA Woodside internal	EP Section 4 (Identification of receptors that may be affected by environmental risks and impacts from the activity) EP Section 6 (Performance outcomes, standards and measurement criteria, and evaluation of environmental risks and impacts, including credible spill scenarios) EP Section 7 (Implementation strategy – including emergency preparedness and response, and Reporting and compliance)	
Oil Pollution Emergency Arrangements (OPEA) Australia	Describes the arrangements and processes adopted by Woodside when responding to a hydrocarbon spill from a petroleum activity.	Regulatory agencies Woodside internal	All	
Oil Spill Preparedness and Response Mitigation Assessment for the Macedon Operations (Cwth) (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.	
Macedon Operations Oil Pollution First Strike Plan (Cwth)	Facility specific document providing details and tasks required to mobilise a first strike response.	Site-based IMT for initial response, activation and notification. CIMT for initial response, activation and notification.	Initial notifications and reporting required within the first 24 hours of a spill event.	

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
	Primarily applied to the first 24 hours of a response until a full Incident Action Plan (IAP) specific to the event is developed. Oil Pollution First Strike Plans are intended to be the first document used to provide immediate guidance to the responding Incident Management Team (IMT).	CIMT: Control function in an ongoing spill response for activity-specific response information.	Relevant spill response options that could be initiated for mobilisation in the event of a spill. Recommended pre-planned tactics. Details and forms for use in immediate response. Activation process for oil spill trajectory modelling, aerial surveillance and oil spill tracking buoy details.	
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 Vessel Shipboard Oil Pollution Emergency Plan (SOPEP) Protection and Deflection Oiled Wildlife Scientific Monitoring

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 Function 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 potentially relevant Tactical Plans for the Macedon Operations (Cwth) oil spill response, refer to ANNEX E: Tactical Response Plans.
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

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
				Guidance for Hydrocarbon Spill Claims Management Communications Support Plan – Australia

2 RESPONSE PLANNING PROCESS

This document details Woodside's process for identifying potential response options for the hydrocarbon release scenarios, identified in the EP. Figure 2-1 outlines the interaction between Woodside's response, planning/ preparedness and selection process.

This structure has been used because it shows how the planning and preparedness activities inform a response and provides indicative guidance on what activities would be undertaken, in sequential order, if a real event were to occur. The process also evaluates alternative, additional and/or improved control measures specific to the PAP.

The Macedon Operations First Strike Plan (Cwth) then summarises the outcome of the response planning process and provides initial response guidance and a summary of ongoing response activities, if an incident were to occur.

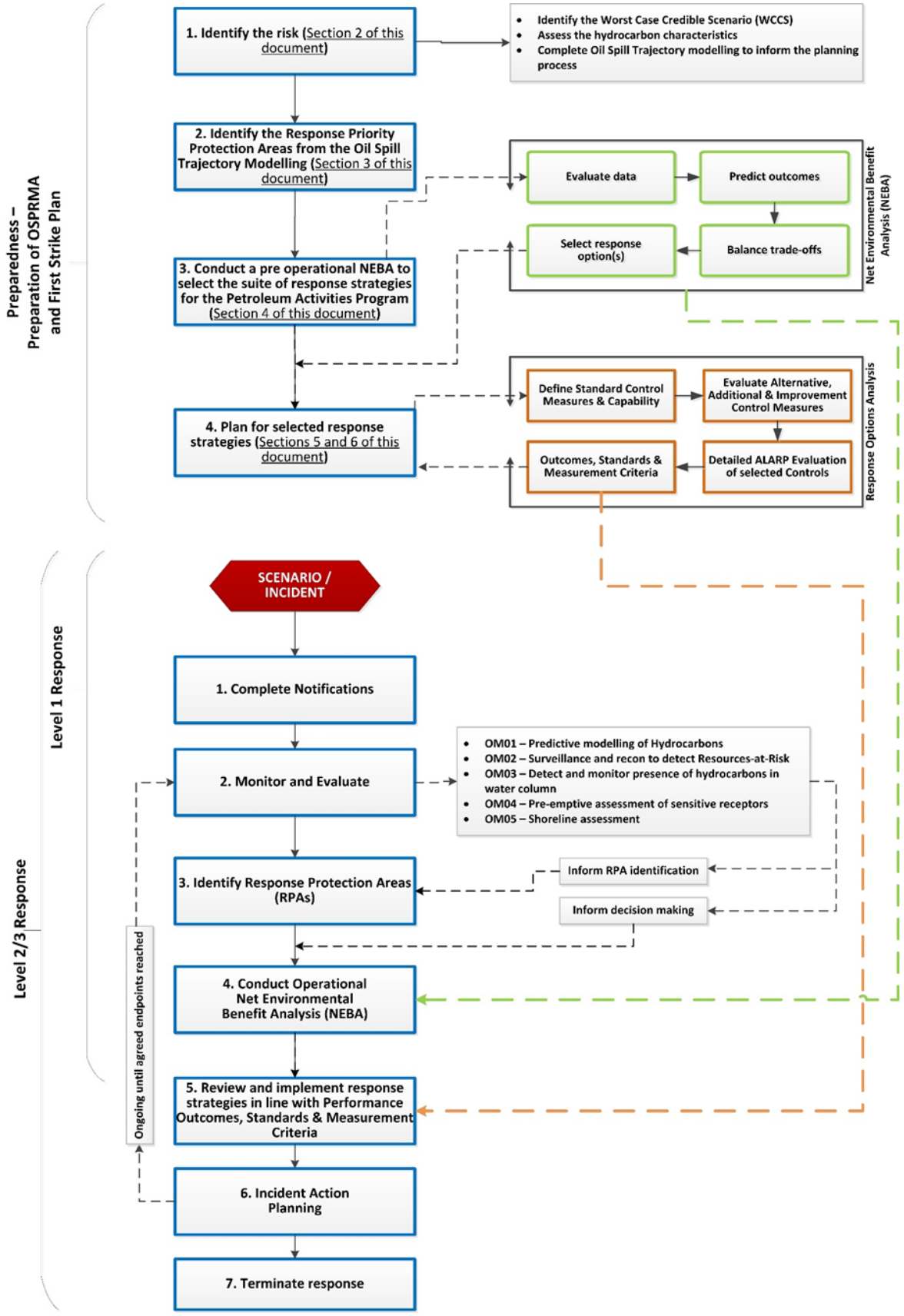

Figure 2-1: Response planning and selection process

2.1 Response planning process outline

This document is expanded below to provide additional context on the key steps in determining capability, evaluating ALARP and hydrocarbon spill response requirements.

Section 1. INTRODUCTION

Section 2. RESPONSE PLANNING PROCESS

- identification of worst-case credible scenario(s) (WCCS)
- spill modelling for WCCS.

Section 3. IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

- areas predicted to be contacted at concentration >100 g/m^2.

Section 4. NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

- pre-operational NEBA (during planning/ ALARP evaluation): this must be reviewed during the initial response to an incident to ensure its accuracy
- selected response techniques prioritised and carried forward for ALARP assessment.

Section 5. HYDROCARBON SPILL ALARP PROCESS

- determines the response need based on predicted consequence parameters.
- details the environmental performance of the selected response options based on need.
- sets the environmental performance outcomes, environmental performance standards and measurement criteria.

Section 6. ALARP EVALUATION

- evaluates alternative, additional, and improved options for each response technique to demonstrate the risk has been reduced to ALARP.
- provides a detailed ALARP assessment of selected control measure options against:
  - predicted cost associated with implementing the option
  - predicted change to environmental benefit
  - predicted effectiveness / feasibility of the control measure.

Section 7. ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

- evaluation of impacts and risks from implementing selected response options.

Section 8. ALARP CONCLUSION

Section 9. ACCEPTABILITY CONCLUSION

2.1.1 Response Planning Assumptions

Figure 2-2 illustrates the initial steps of a response to an oil spill event and, where available, the indicative timing. For the latter stages, the timing will be specific to the selective response option.

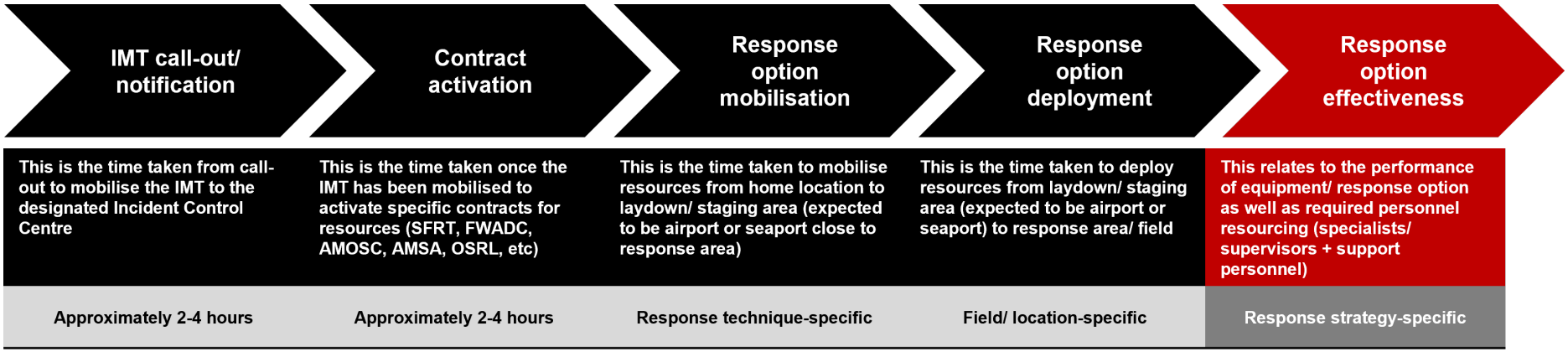

Figure 2-2: Response planning assumption – timing, resourcing and effectiveness

2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP have been identified during the risk assessment process (Section 6.7 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6.6 of the EP. One 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 scenario 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.

Vessel Collision scenario (CS-01) has been modelled and is considered to determine the WCCS for response planning purposes. Although the release volumes are smaller than the Macedon Operations subsea loss of well containment release (CS-02), the residual hydrocarbon component is higher, which leads to shoreline accumulation. Due to this shoreline loading for the vessel collision release, this scenario is selected for planning purposes and is used to inform the shoreline response.

Table 2-1: Petroleum Activities Program credible spill scenarios

Credible Spill Scenarios	Scenario selected for planning purposes	Scenario description	Maximum credible volume released (liquid m^3)[1]	Incident level	Hydrocarbon type	Residual proportion	Residual volume (m^3)
CredibleScenario-01 (CS-01) (WCCS)	Yes	An instantaneous release of 125 m^3 marine diesel from a single tank caused by a vessel collision at the Macedon Well centre.	125 m^3 of Marine Diesel over 21 days	2	MDO	5%	6.25 m^3
Credible Scenario-02 (CS-02)	Yes	Loss of well containment from Macedon-7 well due to loss of Xmas tree and subsurface safety valve ability to emergency close	Dry gas release – no liquid hydrocarbon is expected at atmospheric temperatures.	3	Dry gas	N/A – dry gas	N/A – dry gas

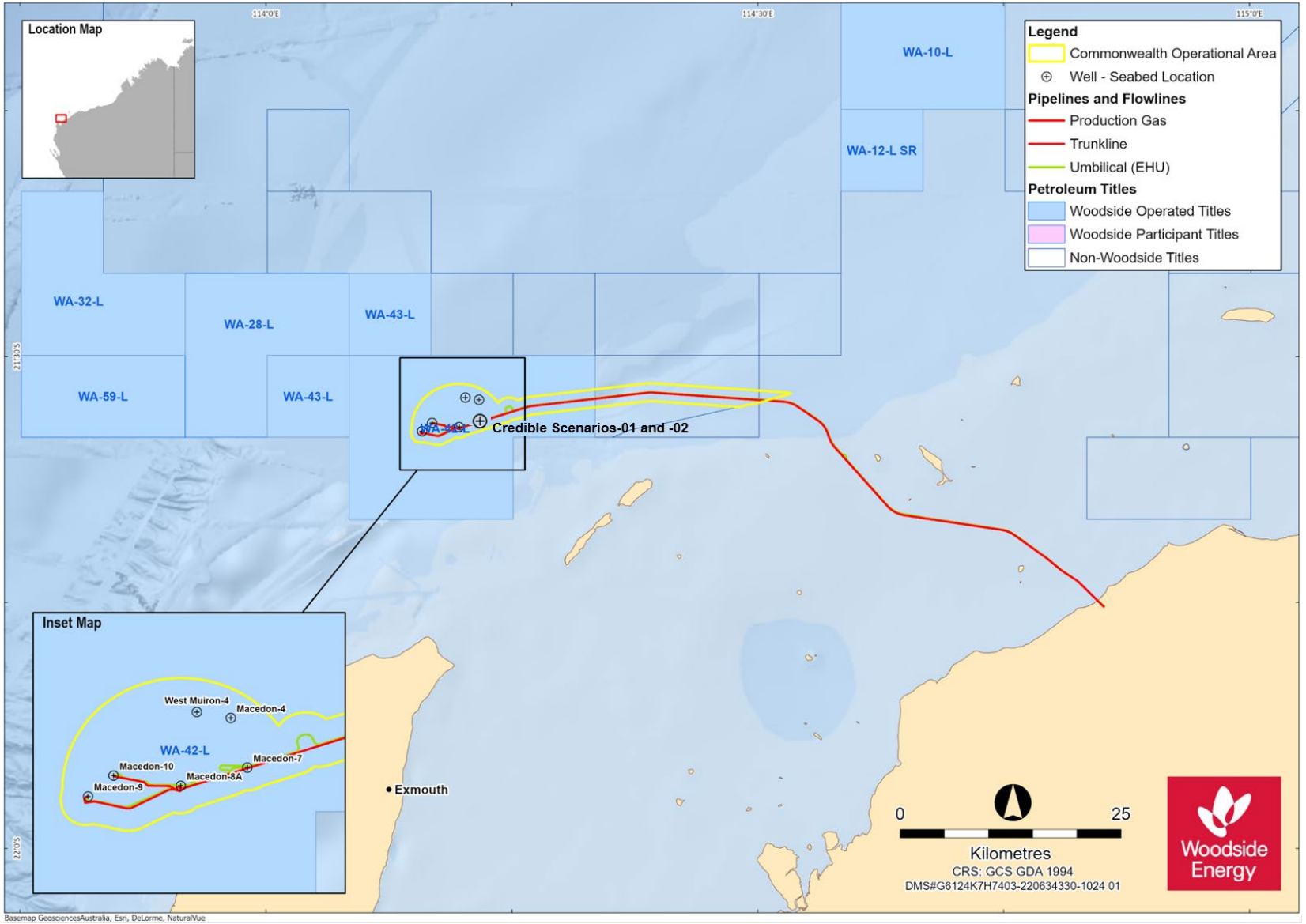

Figure 2-3: Location of the modelled hydrocarbon spill scenarios

2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6.7.6.1 of the EP.

MDO (CS-01)

MDO is typically classed as an International Tanker Owners Federation (ITOPF) Group I/II oil.

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.

Dry gas (CS-02)

The Macedon reservoir properties are dry gas, primarily methane (approximately 94%) and nitrogen (approximately 5%), with limited heavier hydrocarbon components. No liquid hydrocarbons are expected at atmospheric conditions.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises that there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (SIMAP) models are both used for stochastic and deterministic trajectory modelling. They have been developed over three decades of planning, exercises, actual responses, several peer reviews, and validation studies. OILMAP was originally derived from the United States Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Type A model (French et al. 1996), for assessing marine transport, biological impact and economic damage that was also used under the United States Oil Pollution Act 1990 Natural Resource Damage Assessment (NRDA) regulations. Notable spills where the model has been used and validated against actual field observations include, Exxon Valdez (French McCay 2004), North Cape Oil Spill (French McCay 2003), along with an assessment of 20 other spills (French McCay and Rowe, 2004). In addition, test spills designed to verify fate, weathering and movement algorithms have been conducted regularly and in a range of climate conditions (French and Rines 1997; French et al. 1997; Payne et al. 2007; French McCay et al. 2007).

Further to this, the algorithms have been updated using the latest findings from the Macondo/Deepwater Horizon well blowout in the Gulf of Mexico and validated according to the Deepwater Horizon (DWH) oil spill in support of the NRDA (Spaulding et al. 2015; French McCay et al. 2015, 2016). Finally, the OILMAP and SIMAP models have been used extensively in Australia to prosecute pollution offences, predict discharge locations and likely spill volumes based on weathering and surveillance observations, and has been used as expert witness evidence in Australian court proceedings, aiding the prosecution to determine spill quantum estimates.

2.3.1 Stochastic modelling

Quantitative, stochastic assessments have been undertaken for the credible spill scenarios (refer to Table 2-1) to help assess the environmental consequences of a hydrocarbon spill.

A total of 100 replicate simulations were completed for each of the scenarios to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter (25 simulations per quarter). Further details relating to the assessments for the scenarios can be found in Section 6 of the EP.

2.3.1.1 Environmental impact thresholds – Environment that May Be Affected (EMBA) and hydrocarbon exposure

The outputs of the stochastic spill modelling are used to assess the potential environmental impact from the credible scenarios. The stochastic modelling results are used to delineate areas of the marine and shoreline environment that could be exposed to hydrocarbon levels exceeding environmental impact threshold concentrations. The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the EMBA and is discussed further in Section 6 of the EP. As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each fate within the EP.

A conservative approach – adopting accepted accumulation thresholds for impacts on the marine environment – is used to define the EMBA. These hydrocarbon thresholds are presented in Table 2-2 below and described in Section 6 of the EP.

Table 2-2: Summary of thresholds applied to the stochastic hydrocarbon spill modelling to determine the EMBA and environmental impacts

Hydrocarbon	Surface hydrocarbon (g/m^2)	Dissolved hydrocarbon (ppb)	Entrained hydrocarbon (ppb)	Accumulated hydrocarbon (g/m^2)
Condensate	10	50	100	100
Diesel	10	50	100	100

2.3.2 Deterministic modelling

Woodside uses deterministic modelling results to evaluate risks and impacts and response capability requirements. These results are provided in both shapefile and data table format with each row of the data table representing a 1 km^2 cell. This cell size has been used as it represents the approximate area a single containment and recovery operation or surface dispersant operation (single sortie or vessel spraying) can effectively treat in one ten (10) hour day.

Deterministic modelling is undertaken where initial stochastic modelling has indicated that floating oil is present at an impact threshold of >50 g/m^2 and/or where there are shoreline accumulations at an impact threshold of >100 g/m^2. Stochastic modelling for this CS-01 did not predict contact at the trigger threshold concentrations, therefore deterministic modelling was not required and stochastic modelling has been used to scale the response.

Woodside is committed to a realistic, scalable response capability commensurate to the level of risk and able to be practically implemented and feasibly sustained.

2.3.3 Response planning thresholds for surface and shoreline hydrocarbon exposure

Thresholds to determine the EMBA are used to predict and assess environmental impacts and inform the Scientific Monitoring Program (SMP), however they do not appropriately represent the thresholds at which an effective response can be implemented. Additional response thresholds are used for

response planning and to determine areas where response techniques would be most effective. The deterministic modelling is then used to assess the nature and scale of a response.

In the event of an actual response, existing deterministic modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform CIMT decisions.

The deterministic spill modelling outputs are presented at response planning thresholds for surface hydrocarbons for the WCCS. Surface spill concentrations are expressed as grams per square metre (g/m^2) (Section 2.2). The thresholds used are derived from oil spill response planning literature and industry guidance and are summarised below.

2.3.3.1 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 operational monitoring[1]	Code 3 – Dull metallic colours	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [2]	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) (International Tanker Owners Pollution Federation [ITOPF] 2011). Additionally, the recommended rate of application for surface dispersant is typically 1-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

[1] Operational monitoring will be undertaken from the outset of a spill whether or not this threshold has been reached. Monitoring is needed throughout the response to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It also informs when the spill has entered State Waters and control of the incident passes to statutory authorities e.g. Western Australia Department of Transport (WA DoT) or AMSA.

[2] 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.

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, 2015) indicates spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

Further guidance from the European Maritime Safety Authority (EMSA) states spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx. 5 – 50 µm) with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant. Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

Guidance from NOAA in the United States is found in the document: *Characteristics of Response Strategies: A Guide for Spill Response Planning in Marine Environments 2013 (NOAA 2013).* This guide outlines advice for response planning across all common techniques, including surface dispersant spraying and containment and recovery. It states oil thickness can vary by orders of magnitude within distinct areas of a slick, thus the actual slick thickness and oil distribution of target areas are crucial for determining response method feasibility. Further to this, ITOPF also states in terms of oil spill response, sheen can be disregarded as it represents a negligible quantity of oil, cannot be recovered or otherwise dealt with to a significant degree by existing response techniques, and is likely to dissipate readily and naturally (ITOPF, 2014).

Figure 2-4 below from AMSA's Identification of Oil on Water – Aerial Observation and Identification Guide (AMSA, 2014) shows expected percent coverage of surface hydrocarbons as a proportion of total surface area. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

From this information and other relevant sources (Allen and Dale, 1996, EMSA, 2012, Spence, 2018) the surface threshold of 50 g/m^2 was chosen as an average/equilibrium thickness for offshore response operations (50 g/m^2 is an average of 50% coverage of 0.1 mm Bonn Agreement Code 4 – discontinuous true oil colour, or 25% coverage of 0.2 mm Bonn Agreement Code 5 – continuous true oil colour which would represent small patches of thick oil or wind-rows).

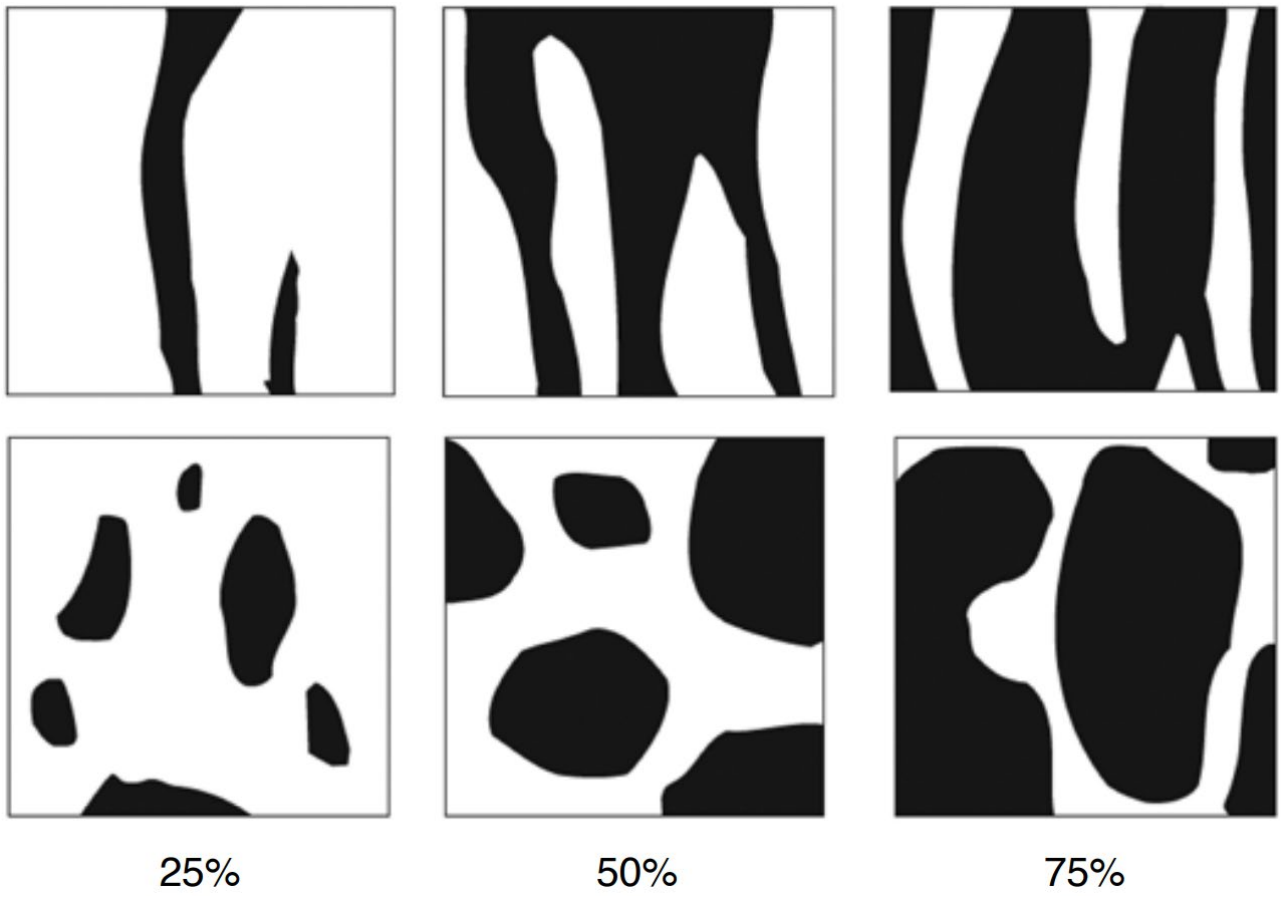

Figure 2-4: Proportion of total area coverage (AMSA, 2014)

Figure 2-5 illustrates the general relationships between on-water response techniques and slick thickness. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

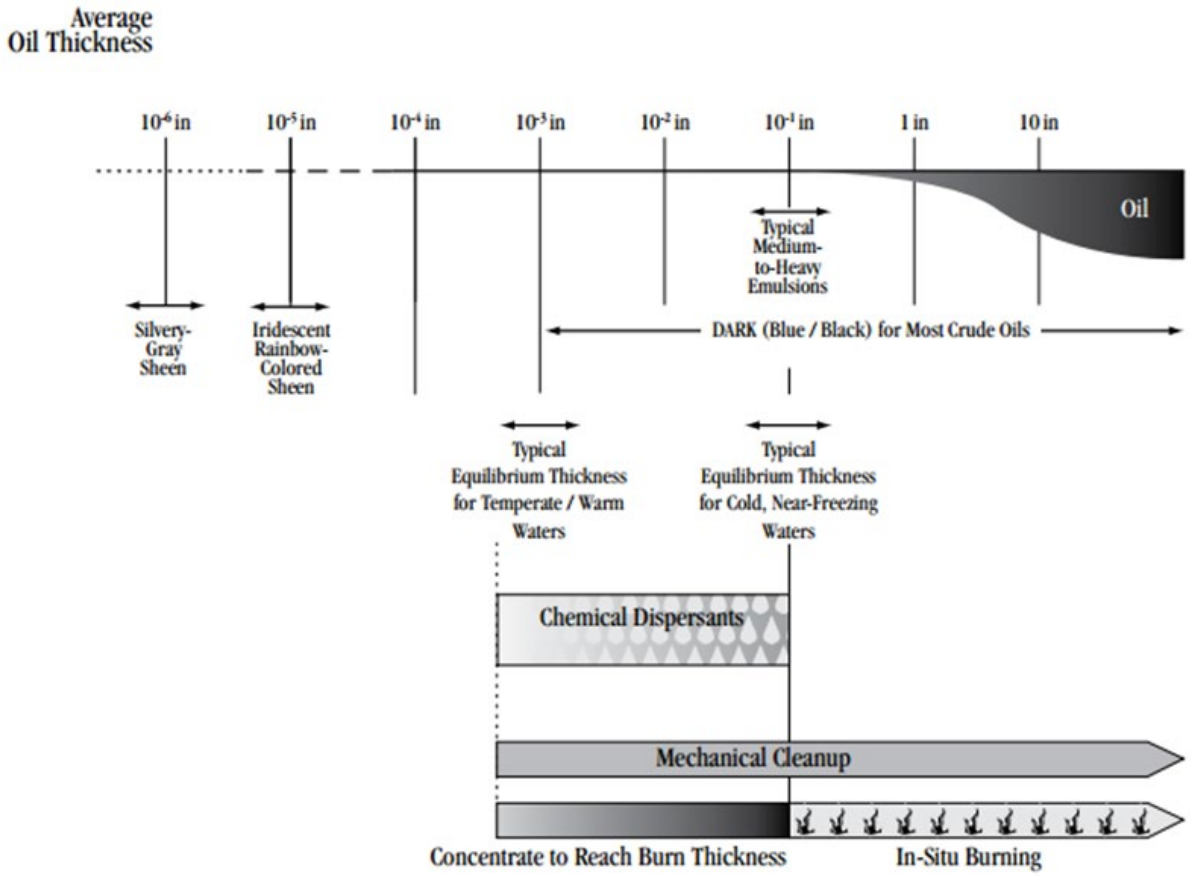

Figure 2-5: Oil thickness versus potential response options (from Allen & Dale 1996)

Wind and 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
15,000*	Predicted maximum viscosity for effective surface dispersant operations	Sometimes possible to disperse	5,000-15,000

*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 15,000 mPa (15,000 cSt). It was considered that some generally applicable viscosity limit, such as 2,000 or 5,000 mPa (2,000 – 5,000 cSt), could be applied to all oils."

However, modern oil spill dispersants are generally effective up to an oil viscosity of 5,000 mPa (5,000 cSt) or more, and their performance gradually decreases with increasing viscosity; oils with a viscosity of more than 15,000 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 – 15,000 cSt at sea temperature above pour point are sometimes possible to disperse, with products beyond 15,000 cSt at sea temperature below pour point are generally impossible to disperse.

To support decision making and response planning, a threshold of 15,000 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
	Vessel Collision
WCCS – total volume released Refer to Section 2.2.1 for detailed hydrocarbon characteristics	Hydrocarbon release from a single tank caused by a vessel collision at the Macedon Well centre. Surface – 125 m^3 over 21 days
WCCS – residual volume remaining post-weathering	5% residue (6.25 m^3)
Location	Lat: 21° 34' 17.46" S, Long: 114°11' 47.008" E
Stochastic modelling results	
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m^2)	36 hours (to Exmouth Coastline, Ningaloo Coast WH, and Ningaloo Marine Park (State)).
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a concentration of 100 g/m^2)	No contact reached at this threshold.
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor (at a concentration of 100 g/m^2).	No contact reached at this threshold (3 m^3 at Exmouth Coastline, Ningaloo Coast WH, and Ningaloo Marine Park (State) below feasible response threshold).
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (at a concentration of 100 g/m^2).	No contact reached at this threshold (3 m^3 at Exmouth Coastline, Ningaloo Coast WH, and Ningaloo Marine Park (State) below feasible response threshold).
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	5 hours (to Ningaloo Marine Park and Ningaloo WH waters).

The above modelling results have been used as the basis for response planning and are included in Section 4.2

Analysis of the stochastic modelling results predicts the following:

2.3.4.1 Macedon Operations (Cwth) Vessel Collision Scenario (CS-01)

- The surface release results in insufficient concentrations for effective surface dispersant, shoreline clean-up and containment and recovery operations.
- No shoreline contact is predicted at feasible response thresholds (>100 g/m^2).
- Spreading and weathering of the surface oil occurs rapidly due to the loss of light, volatile components and the spreading will reduce the effectiveness and available surface area for containment and recovery and surface dispersant operations as shown in the figures below.
- Response operations cannot be implemented if the safety of response personnel cannot be guaranteed. Safety circumstances that limit the execution of this control measure include volatile concentrations of hydrocarbons in the atmosphere, high winds (>20 knots), waves and/or sea states (>1.5m waves) and high ambient temperatures.

3 IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

In a response, operational monitoring programs – including trajectory modelling and vessel/aerial observations – would be used to predict RPAs that may be impacted. For the purposes of planning and appropriately scaling a response, modelling has been used to identify RPAs as outlined below in Figure 3-1.

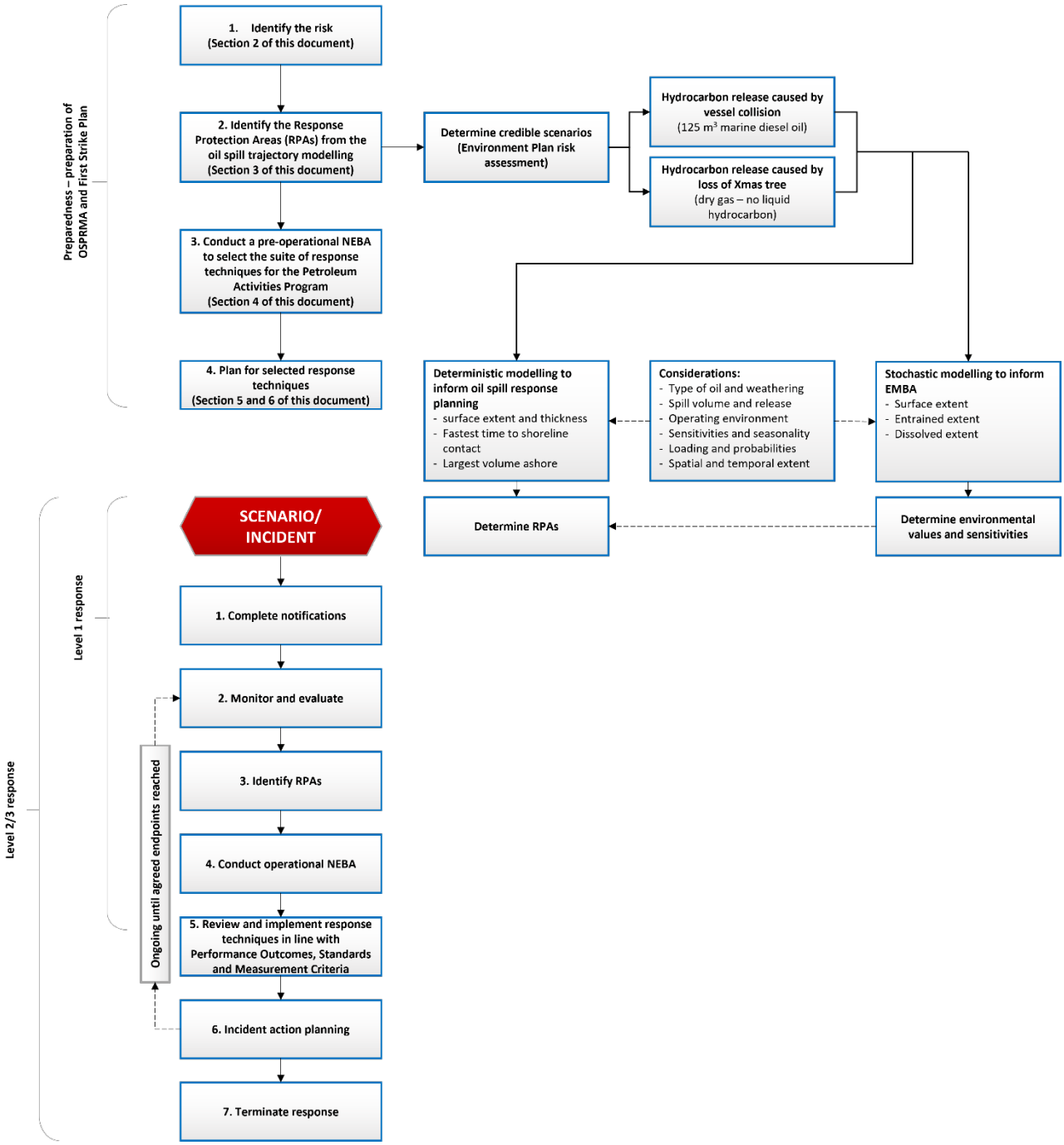

Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Section 4 of the EP includes the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds
- receptors within the EMBA which meet the following:
  - a number of priority protection criteria/categories
  - International Union of Conservation of Nature IUCN marine protected area categories
  - high conservation value habitat and species
  - important socio-economic/heritage value.

3.2 Identify Response Protection Areas (RPAs)

RPAs have been selected on the basis of their environmental ecological, social, economic, cultural and heritage values and sensitivities and the ability to conduct a response based on the minimum response thresholds (detailed in Section 2.3.3.1). It is important to note that the stochastic modelling results are the combined results of the individual worst-case runs and do not indicate a single worst case credible scenario (where the timings and volumes are all expected from one release).

From the identified sensitive receptors described in Section 4 of the EP, only those which a shoreline response could feasibly be conducted (accumulation > 100 g/m^2 for shoreline assessment and/or contact with surface slicks >50 g/m^2 for feasible offshore response) are selected for response planning purposes.

No RPAs are therefore defined for this activity. Operational monitoring will, however, be undertaken from the outset of a spill to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It will also inform if or when the spill enters State Waters and/or control of the incident passes to statutory authorities e.g. WA DoT or AMSA. If operational monitoring does identify RPAs at risk of impact during a real spill event, TRPs for a shoreline response will be drafted in advance for any RPAs with a contact time of <14 days.

Additional sensitive receptors are presented the existing environment description (Section 4 of the EP) and impact assessment section (Section 6.7 of the EP) for each respective spill scenario. The pre-operational NEBA (Section 4) considers the results from the stochastic modelling to ensure all feasible response techniques are considered in the planning phase, therefore additional receptors are also included in the pre-operational NEBA.

4 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

A Net Environmental Benefit Analysis (NEBA) is a structured process to consider which response techniques are likely to provide the greatest net environmental benefit.

The NEBA process typically involves four key steps outlined in Figure 4-1: evaluate data, predict outcomes, balance trade-offs, and select response options. These steps are followed in the planning/preparedness process and would also be followed in a response.

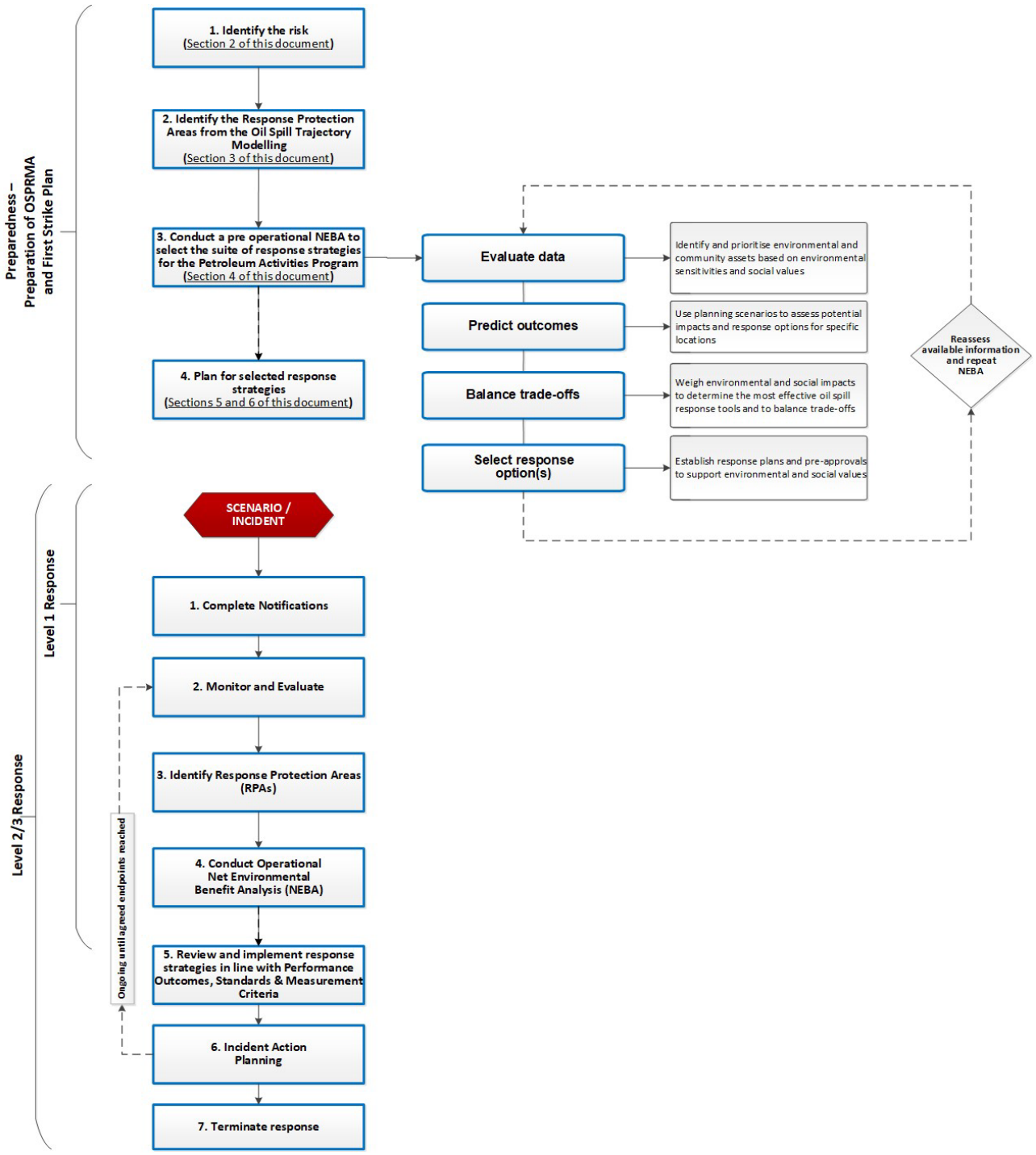

Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

4.1 Pre-operational / Strategic NEBA

The pre-operational NEBA identifies positive and negative impacts to sensitive receptors from implementing the response techniques. Feasibility is considered by assessing the receptors potentially impacted above response thresholds (Section 2.3.3) and the surface concentrations (Section 2.3.3.1) from the modelling.

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. Comprehensive details of the pre-operational NEBA for this PAP are contained in **ANNEX A**: Net Environmental Benefit Analysis detailed outcomes.

4.2 Stage 1: Evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the PAP activities.

4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. The WCCS is then selected for deterministic modelling and is used for this pre-operational NEBA. Outlier locations with potential environmental impacts, selected from the stochastic modelling may also be included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/effectiveness and scale of the response. Modelling results are available in Table 2-5.

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:

- Operational monitoring
- Source control
  - Remotely operated vehicle (ROV) intervention
  - debris clearance and/or removal
  - capping stack
  - containment dome
  - 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
- In-situ burning
- Oiled wildlife response (including hazing)
- Waste management
- Post spill/ scientific monitoring

Table 4-1 and Table 4-2 includes scenario-specific assessments of feasible response options and justification for the exclusion of inappropriate options. These options are evaluated against the scenario parameters including oil type, volume, characteristics, prevailing weather conditions, logistical support, and resource availability to determine deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and different times during the response. The NEBA process assists in prioritising which options to use where and when, and timings throughout the response.

Table 4-1: Response technique evaluation – vessel collision (CS-01)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Marine Diesel (MDO)				
Operational Monitoring	Will be effective in tracking the location of the spill, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: • OM01 Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. • OM02 Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. • OM03 Monitoring of hydrocarbon presence, properties, behaviour and weathering in water – from outset of spill. • OM04 Pre-emptive assessment of sensitive receptors at risk – triggered once OM01, OM02 and OM03 inform likely RPAs at risk. • OM05 Shoreline assessment – once OM02, OM03 and OM04 inform if any RPAs have been impacted.	Monitoring of a marine diesel spill is a feasible response technique and outputs will be used to guide decision making on the use of other monitoring/response techniques and providing information to regulatory agencies including AMSA and WA DoT. Practicable techniques that could be used for this scenario include predictive modelling (OM01), surveillance and reconnaissance OM02) and monitoring of hydrocarbon presence in water (OM03). Modelling does not predict impact of any shoreline receptors at moderate thresholds, only low thresholds, however, pre-emptive assessment of sensitive receptors at risk (OM04) and monitoring of contaminated resources (OM05) 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 behaviour of the oil in water • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via vessel SOPEP	Controlling the spill of diesel at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of diesel from a vessel collision will be instantaneous and source control will be limited to what the vessel or facility can safely achieve whilst responding to the incident.	Yes	Ability to stop the spill at source will be dependent upon the specific spill circumstances and whether or not it is safe for response personnel to access/isolate the source of the spill.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce VOCs in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	Modelling does not predict that floating oil will reach the minimum feasible threshold at which to commence surface dispersant application (>50 g/m^2). This technique is also 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.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
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.	Modelling does not predict that floating oil will reach the minimum feasible threshold at which to commence containment and recovery (50 g/m^2). This technique is also 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 commencement of containment and recovery operations.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of at-risk areas.	Spill modelling indicates that floating oil will only accumulate at receptors at low thresholds, therefore the deployment of shoreline protection strategies may not be a feasible response strategy. A marine diesel spill would be prone to rapid spreading and evaporation and modelling predicts that no shoreline receptors will be contacted at feasible response threshold (>100 g/m^2). Furthermore, the volatile nature of marine diesel is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon. Operational monitoring will be deployed from the outset of a spill to track the spill location and fate in real-time and will provide information on the feasibility of implementing shoreline protection and deflection strategies.	Potentially	Spill modelling indicates that floating oil will only accumulate at receptors at low thresholds, therefore the deployment of shoreline protection strategies may not be a feasible response strategy. In addition, safety issues and the rapid spreading and evaporation of the diesel may result in this response not being unsuitable. The potential application of this response strategy will be dependent on the operational monitoring and operational NEBA conducted at the time of the spill incident.
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.	A marine diesel spill would be prone to rapid spreading and evaporation and the modelling predicts that no shoreline receptors will be contacted at feasible response threshold (>100 g/m^2). 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 and will provide information on the feasibility of implementing shoreline clean-up strategies.	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. 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 limited impact to areas at low thresholds only thus it is unlikely that this technique will be required. However, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken as and where required.

Table 4-2: Response technique evaluation – dry gas release from loss of containment (CS-02)

Response technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Dry Gas				
Monitor and evaluate	For a dry gas release, established (liquid hydrocarbon) spill monitoring techniques are not applicable. Monitoring the gas plume via the ROV sonar tool may be effective, in conjunction with other well information, in determining appropriate source control techniques. If the plume breaches the surface, gas monitoring at the surface will be effective in ensuring atmospheric volatiles remain below safe operating levels and may be used to direct simultaneous operations (SIMOPS).	Monitoring the gas plume may be feasible where safe access via the ROV can be achieved and line of (sonar) sight is achievable to observe the gas plume. Outputs may be used to guide decision making on the use of source control techniques including options for safe and effective capping stack deployment, and relief well execution. Gas monitoring at the surface is a feasible practice and may be undertaken via the support vessels' gas monitoring equipment.	Yes	If feasible and safe, monitoring the gas plume via ROV and gas monitoring at the surface may: • determine the behaviour of the plume • monitor the surface plume (if water's surface is breached) • determine appropriate source control response techniques • inform on effectiveness of response techniques • ensure safety of response personnel • guide SIMOPS
Source control via blowout preventer (BOP) intervention	Not applicable – production wells do not have blowout preventers in place and thus intervention and/or hotstab are not feasible response techniques.	Not applicable – production wells do not have blowout preventers in place and thus intervention and/or hotstab are not feasible response techniques.	**N/A**	Not applicable – production wells do not have blowout preventers in place and thus intervention and/or hotstab are not feasible response techniques.
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. If the ROV intervention on the BOP is unsuccessful, the deployment of a capping stack will be the secondary feasible option to stop the flow from the well.	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 is feasible once metocean conditions (wind, waves etc) and plume diameter are appropriate for safe deployment.
Source control via relief well drilling	A subsea release of methane will be stopped approximately 69 days after the release. Relief well drilling will be a feasible option to stop the flow from the well.	Relief well drilling is a widely accepted and utilised technique.	Yes	Relief well drilling is a proven technique employed to control a loss of well containment event should the other containment measures be unsuccessful.
Subsea Dispersant Injection	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.
Surface dispersant application	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.
Mechanical dispersion	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.
In-situ burning	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.
Containment and recovery	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.
Shoreline protection and deflection	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.
Shoreline clean-up	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.
Oiled wildlife response	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	No	Not applicable for a dry gas LOWC.

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* (2021) 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:

1. considers the Response Planning Need identified in terms of surface area (km^2) and available surface hydrocarbon volumes (m^3) against existing Woodside capability
2. 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.
3. 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:

1. a structured process for identifying and considering alternative, additional, and improved options has been completed for each selected response technique
2. 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.
3. where an alternative, additional and/or improved control measure is adopted, a measurable level of environmental performance has been assigned
4. 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
5. cumulative effects have been analysed when considered in combination across the whole activity.

The response technique selection is based on the risk assessment conducted in the EP. The risk assessment identifies the type of oil, volume of release, duration of release, predicted fate, weathering and the EMBA (along with other requirements such as time to impact and predicted volumes ashore). Modelling is then used to inform the NEBA and the prioritisation of suitable

response options. The scale of the response techniques selected in the pre-operational NEBA is informed through the assessment of results from deterministic modelling.

For the purpose of the ALARP assessment, the following terms and definitions have been used:

- Response techniques are considered the control measures that reduce consequences from hydrocarbon spill events. The terms ‘response technique’ and ‘control measure’ are used interchangeably.
- Cost is defined as the time, effort and/or trouble taken in financial, safety, design/storage/installation, capital/lease, and/or operations/maintenance terms to adopt a control measure.
- Where the predicted change to environmental impact is compared against standard environmental values and sensitivities impacts using positive or negative criteria from the NEBA Impact Ranking Classification Guidance in Annex A.

5.1 Operational Monitoring

Operational Monitoring 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.

The table below provides the operations monitoring plans that support the successful execution of this response technique.

Table 5-1: Description of supporting operational monitoring plans

ID	Title
OM01	Predictive modelling of hydrocarbons to assess resources at risk
OM02	Surveillance and reconnaissance to detect hydrocarbons and resources at risk
OM03	Monitoring of hydrocarbon presence, properties, behaviour and weathering in water
OM04	Pre-emptive assessment of sensitive receptors at risk
OM05	Shoreline assessment

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 will be completed to guide effective shoreline clean-up operations. This plan includes the process for the CIMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Exmouth 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 Onslow. However, in the unlikely event of an extended spill with potential to impact receptors further afield, monitoring activities may also be mobilised from Onslow and Dampier/ Karratha.

5.1.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Floating surface oil in sufficient concentrations for effective operational monitoring is expected to be limited with surface concentrations of 10 g/m^2 reaching up to five receptors from the well location, with the shortest time to contact being 1.5 days (36 hours). Floating surface oil at concentrations of 50 g/m^2 were not predicted for this scenario.
- The shortest timeframe that shoreline contact from floating oil is predicted is 1.5 days (36 hours).
- The time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 5 hours at both Ningaloo Marine Park and Ningaloo Coast World Heritage Marine Park.
- 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 functions. These should be reviewed and updated regularly.

5.1.2 Environmental performance based on need

Table 5-2: Environmental Performance – Operational Monitoring

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
1	Oil spill trajectory modelling	1.1	Initial modelling available within 6 hours using the Rapid Assessment Tool	1, 3B, 3C, 4
		1.2	Detailed modelling available within 4 hours of APASA 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 Oil Pollution 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 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	1 trained aerial observer 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 First Strike Plan. Observers report available to the CIMT within 2 hours of landing after each sortie.	1, 2, 3B, 4

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
		4.4	Unmanned Aerial Vehicles/Systems (UAV/UASs) to support SCAT, containment and recovery and surface dispersal and pre-emptive assessments as contingency if required.	1, 2
5	Hydrocarbon detections in water	5.1	Activate 3rd party service provider as per first strike plan. Deploy resources within 2 days: • 2 specialists in water quality monitoring • 2 monitoring systems and ancillaries • 1 vessel for deploying the monitoring systems with a dedicated winch, A-frame or Hiab and ancillaries to deploy the equipment.	1, 2, 3C, 3D, 4
		5.3	Water monitoring services available and employed during response	1, 3C, 4
		5.4	Preliminary results of water sample as per contractor's implementation plan within 7 days of receipt of samples at the accredited lab	
		5.5	Daily fluorometry reports as per service provider's implementation plan will be provided to CIMT to validate modelling and monitor presence/ absence of entrained hydrocarbons.	
		5.6	Use of Autonomous Underwater Vehicles (AUVs) for hydrocarbon presence and detection may be used as a contingency if the operational SIMA confirms conventional methods are unsafe or not possible.	1, 2, 3C, 4
6	Pre-emptive assessment of sensitive receptors	6.1	5 days prior to any predicted impact/ Within 24 hours, in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4
		6.2	Daily reports provided to CIMT on the status of the receptors to prioritise Response Protection Areas (RPAs) and maximise effective utilisation of resources.	1, 3B, 4
7	Shoreline assessment	7.1	5 days prior to any predicted impact/ Within 24 hours, in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 specialist(s) in SCAT from resource pool for each of the Response Protection Areas (RPAs) with predicted impacts	1, 2, 3B, 3C, 4
		7.2	SCAT reports provided to CIMT daily detailing the assessed areas to maximise effective utilisation of resources	1, 3B, 4
8	Management of Environmental Impact of the	8.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic	1

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
	response risks		environments with a preference for areas of sandy seabed where they can be identified	
		8.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		8.3	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations	

The control measures and capability of Woodside and its third-party service providers are shown to support Operational Monitoring activities up to and including the identified WCCS. This is demonstrated by the following:

- Woodside has a documented, structured and tested capability for Operational Monitoring operations including internal trajectory modelling capabilities, tracking buoys located offshore and contracted aerial observation platforms with access to trained observers.
- Woodside and its third-party service providers anticipate there is sufficient capability for the duration of the response.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.1.

5.2 Source control and well intervention

A loss of well containment is considered a credible scenario during drilling operations. Woodside anticipates this scenario would result in an uncontrolled flow of dry gas from the well as outlined in the EP. In the event of a loss of well containment, the primary response would be source control and well intervention.

The Woodside Source Control Response Procedure includes the process for the CIMT to mobilise resources for BOP intervention, Subsea First Response Toolkit (SFRT) support, and capping support. This plan has pre-identified vessel specifications and contracts required for SFRT debris clearance work and Woodside monitors the availability and location of these vessels.

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. Moored MODUs are suitable for the Macedon wells.

Source control operations cannot be implemented if the safety of response personnel cannot be guaranteed. 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 (>1.5m waves) and high ambient temperatures. As the dry gas plume for the PAP is not predicted to breach the water's surface, Woodside anticipates LEL concentrations and volatile concentrations of hydrocarbons in the atmosphere are unlikely to pose a safety issue for response personnel. Gas monitoring will, however, be undertaken in line with standard protocol.

5.2.1 Response need based on predicted 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 intended to ensure that the site is safe including subsea ROV surveys and surface air monitoring.
- Hydrocarbons will flow from the well until one of the following interventions can be made:
  - closure of the tubing retrievable safety valve (TRSV)
  - intervention with a capping stack
  - a relief well is drilled and first attempt at well kill within 69 days.
- 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 functions. These should be reviewed and updated regularly.
- The duration of the spill may be up to 69 days.

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 5-3: Response Planning Assumptions - Source Control

Response planning assumptions	
Capping stack feasibility	For the Macedon wells, conventional/ vertical capping stack deployment may be feasible. This would be considered, at the discretion of the vessel master on the day, giving due regard to the safety of the vessel and crew and factors that may influence a safe deployment such as plume radius and acceptable environmental conditions e.g. wind speed, wave height, current and plume radius.
Safety considerations	Source control operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site, in accordance with the Woodside Management System (WMS). Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • high winds, waves and/or sea states • high ambient temperatures.
Feasibility considerations	Woodside's primary source control options would be ROV intervention and capping stack deployment. Relief well drilling operations will begin concurrently to provide an option to permanently abandon the well after the well flow is stopped. The following approaches outline Woodside's hierarchy approach for selecting suitable MODU's for relief well operations; • Primary – review internal drilling programs and MODU availability to source appropriate rig(s) operating within Australia with an approved Safety Case; • Alternate – source and contract MODUs through Australian Energy Producers' (AEP) Memorandum of Understanding (MoU) that is operating within Australia with an approved Safety Case; • Contingency – source and contract a MODU outside Australia with an approved Australian Safety Case

5.2.2 Environmental performance based on need

Table 5-4: Environmental Performance - Source Control

Environmental Performance Outcome		**To stop the flow of hydrocarbons into the marine environment**		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
9	Subsea First Response Toolkit (SFRT)	9.1	Oceaneering support staff available all year round, via contract, to assist with the mobilisation, deployment, and operation of the SFRT equipment.	1, 3B, 3C
		9.2	Intervention vessel with minimum requirement of a working class ROV and operator.	1, 3C
		9.3	Mobilised to site for deployment within 11 days.	1, 3B, 3C
		9.4	Open communication line to be maintained between CIMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
10	Well intervention	10.1	Frame agreements with ROV providers in place to be mobilised upon notification. ROV equipment deployed within 7 days.	1, 3B, 3C
		10.2	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
		10.3	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
		10.4	Hot Stab and/or well intervention attempt made using ROV and SFRT within 11 days.	1, 3B, 3C
		10.5	Capping stack on suitable vessel mobilised to site within 16 days. Deployment and well intervention attempt will be made once safety and metocean conditions are suitable.	1, 3C
		10.6	Wild Well Control Inc (WWCI) staff available all year round to assist with the mobilisation, deployment, and operation of the capping stack and well intervention equipment.	1, 3B, 3C
		10.7	MODU towed to site for relief well drilling within 7 days for a locally available MODU, or 29 days for a MODU from outside the region.	1, 3C
		10.8	First well kill attempt completed within 69 days.	1, 3B, 3C
		10.9	Open communication line(s) to be maintained between CIMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
		10.10	Monthly monitoring of the availability of MODUs through existing market intelligence including current Safety Case history, to meet specifications for relief well drilling. Titleholders of suitable MODUs notified.	3C
		10.11	An approved WOMP is in place which includes summary relief well and source control planning information.	1, 3A

Environmental Performance Outcome		**To stop the flow of hydrocarbons into the marine environment**		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
11	Support vessels	11.1	Monthly monitoring of availability of larger vessels through existing Frame Agreements and market intelligence to meet specifications for source control.	3C
		11.2	Frame agreements for Infield Support Vessels (ISVs) require vessels maintain in-force safety case approvals covering ROV operations and provide support in the event of an emergency.	1, 3B, 3C
		11.3	MODU and vessel contracts include clause outlining requirement for support in the event if an emergency	1, 3C
12	Safety case	12.1	Woodside will prioritise MODU or vessel(s) for intervention work(s) that have an existing safety case.	1, 3C
		12.2	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
		12.3	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 well intervention and 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 clearly disproportionate to the insignificant environmental benefit gained and/or not reasonably practicable for this PAP.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.2.

5.3 Source Control via Vessel 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 7.5.

Performance standards for each contracted PAP vessel are detailed in the vessel's specific SOPEP.

These standards ensure that sufficient resources are available and are adequately tested to ensure implementation of the SOPEP in the event of a hydrocarbon spill.

5.4 Shoreline Protection and Deflection

The placement of containment, protection or deflection booms on and near a shoreline is a response technique to reduce the potential volume of hydrocarbons contacting or spreading along shorelines, which may reduce the scale of shoreline clean-up. Hydrocarbons contained by the booms would be collected where practicable.

Shorelines would be protected where accessible via vessel or shore. Where hydrocarbon contact has already occurred, there may still be value in deploying protection equipment to limit further accumulations and preventing remobilisation of stranded hydrocarbons.

Shoreline protection and deflection equipment would be mobilised to selected locations, where the following conditions were met:

- Sea-states and hydrocarbon characteristics are safe to deploy protection and deflection measures,
- Oil trajectory has been identified as heading towards identified RPAs.

5.4.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- Floating surface oil in sufficient concentrations for effective operational monitoring is expected to be limited with surface concentrations of 10 g/m^2 reaching up to five receptors from the well location, with the shortest time to contact being 1.5 days (36 hours). Floating surface oil at concentrations of 100 g/m^2 were not predicted for this scenario.
- No shoreline contact is predicted at feasible response threshold (>100 g/m^2) for the duration of the spill.
- The shortest timeframe that shoreline contact from floating oil (below response threshold) is predicted is 1.5 days (36 hours).
- The time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 5 hours at both Ningaloo Marine Park and Ningaloo Coast World Heritage Marine Park.
- 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 functions. These should be reviewed and updated regularly.
- Arrangements for support organisations who provide specialist services (trained personnel, protection and deflection equipment) and/or resources and should be tested regularly.
- Tactical Response Plans (TRPs) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents need to be in place for Operational and Support functions. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for Shoreline Protection and Deflection. These assumptions have been described in the table below.

Table 5-5: Response Planning Assumptions – Shoreline Protection and Deflection

Response Planning Assumptions	
Safety considerations	Shoreline protection and deflection operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • safe for deployment and conditions within range of vessels • high ambient temperatures.
Shoreline Protection and Deflection	• One Shoreline Protection and Deflection operation may include; • Quantity of shoreline sealing boom (as outlined in TRP) • Quantity of fence or curtain boom (as outlined in TRP) • 1-2 x trained supervisors • 8-10 x personnel/ labour hire Specific details of each operation would be tailored to the Tactical Response Plan implemented (where available).

5.4.2 Environmental performance based on need

Table 5-6: Environmental Performance – Shoreline protection and deflection

Environmental Performance Outcome		To stop hydrocarbons encountering particularly sensitive areas		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
13	Response teams	13.1	In liaison with WA DoT (for Level 2/3 incidents), relevant Tactical Response Plans (TRPs) will be identified in the First Strike plan for activation (within 24 hours/ 1 day prior to a predicted impact).	1, 3A, 3C, 4
		13.2	In liaison with WA DoT (for Level 2/3 incidents), mobilise teams to RPAs within 48 hours/ 2 days. Teams to contaminated RPAs comprised of: • 1-2 trained specialists per operation • 8-10 personnel/labour hire • Personnel sourced through resource pool.	1, 2, 3B, 3C, 4
		13.3	In liaison with WA DoT (for Level 2/3 incidents), SPD operation mobilised within 48 hours to each identified RPA. Expected to be at RPAs within 2 days (operation determined by operational NEBA)	1, 3A, 3B, 4
		13.4	12 trained personnel available within 48 hours/ 2 days prior to a predicted impact sourced through resource pool.	1, 2, 3A, 3B, 3C, 4
		13.5	Open communication line to be maintained between CIMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
		13.6	The safety of shoreline response operations will be considered and appropriately managed. During shoreline operations: • All personnel in a response will receive an operational/safety briefing before commencing operations • Gas monitoring and site entry protocols will be used to assess safety of an operational area before allowing access to response personnel	1, 3B, 4
14	Response equipment	14.1	Equipment mobilised from closest stockpile (within 24-48 hours/ 1-2 days).	1, 3A, 3C, 4
		14.2	Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles (within 48-72 hours/ 2-3 days).	1, 3C, 3D, 4
		14.3	Supplementary equipment mobilised from OSRL (> 72 hours/ 3 days).	
		14.4	Woodside maintains integrated fleet of vessels. Additional vessels can be sourced through existing contracts/frame agreements	1, 3A, 3C, 4
15	Management of Environmental Impact of the response risks	15.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		15.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	

The resulting shoreline protection and deflection capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to shoreline protection and deflection at identified RPAs.

Under optimal conditions, during the subsea and surface releases the capability available exceeds the need identified. It indicates that, the shoreline protection and deflection capability have the following expected performance:

- Stochastic modelling scenarios indicate that first shoreline impact at Exmouth Coast (including Ningaloo Coast WH and Ningaloo MP (State)) within 1.5 days for the Macedon Operations (Cwth) Vessel Collision scenario.
- Existing capability allows for mobilisation and deployment of shoreline protection operations by Day 1-2 (if required). Given shoreline contact is predicted on Day 1.5, the existing capability is considered sufficient to mobilise and deploy protection prior to hydrocarbon contact, guided by the ongoing operational monitoring. However, given the low concentrations predicted, shoreline protection and deflection is considered an opportunistic response strategy if applicable at the time.
- One significant constraint on expanding the scale of response operations is the availability of accommodation and transport services in the region between Exmouth and Port Hedland, and the management of response generated waste. From previous assessment of accommodation in this region, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day for an ongoing operation.
- TRPs have been developed for all identified RPAs excepting international locations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 946.3.

5.5 Oiled wildlife response (including hazing)

Oiled wildlife response (OWR) includes wildlife surveillance/ reconnaissance, wildlife hazing, pre-emptive capture, and the capture, cleaning, treatment, and rehabilitation of animals that have been oiled. In addition, it includes the collection, post-mortem examination, and disposal of deceased animals that have succumbed to the effects of oiling.

For a petroleum activity spill in Commonwealth waters, Woodside is required to take the role of 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 CIMT 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 Biodiveristy, Conservation and Attractions (DBCA).

The key plan for OWR in WA is the WAOWRP (DBCA, 2022a). The WAOWRP establishes the framework for preparing and responding to potential or actual wildlife impacts during a spill and sets out the management arrangements for implementing an OWR in conjunction with the DoT *State Hazard Plan – Maritime Environmental Emergencies* (SHP-MEE). It is the responsibility of DBCA to administer the WAOWRP under the direction of the DoT. The WA OWR Manual (DBCA, 2022b) supports, and should be used in conjunction with, the WAOWRP. The purpose of the WA OWR Manual is to standardise the operating procedures, protocols and processes for an OWR during a spill event in WA waters, and to create alignment between the wildlife response processes and the overall incident response (DBCA, 2022b).

If a spill occurs in WA State waters or enters State waters, DBCA is the Jurisdictional Authority for wildlife, and for level 2/3 spills, will also lead the oiled wildlife response under the control of the DoT. DBCA is the State Government agency responsible for administering the *Biodiversity Conservation Act 2016 (BC Act)*, which has provisions for authorising activities that affect wildlife.

For level 1 spills in State waters, Woodside is required to take the role of Control Agency, including for wildlife response. It is, however, also an expectation that for level 2/3 petroleum activity spills, Woodside will conduct the initial first-strike response actions for wildlife response and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

Woodside retains specialist personnel to support and manage oiled wildlife operations, including trained and competent responders for deployment in Exmouth and Dampier. Additional personnel would be sourced through Woodside's arrangements to support an oiled wildlife response as required.

5.5.1 Response need based on predicted consequence parameters

Wildlife Response Priority Areas and Assessment of Wildlife Impact

French-McCay et al. (2002), based on a review of existing literature at the time, determined lethal thresholds for floating and shoreline oil for the external coating of wildlife to be 10 g/m^2 for floating, and 100 g/m^2 for shoreline accumulation. It should however be noted that toxicity thresholds for wildlife are likely to be highly variable due to differences in species sensitivity, type of hydrocarbon, type of exposure (ingestion or external oiling), life-stage, and on-water versus land habitat.

For planning purposes, determination of wildlife priority protection areas is based on stochastic modelling of the worst-case spill scenarios at 10 g/m^2 for floating, and 100 g/m^2 for shoreline

accumulation (acknowledging that impacts to wildlife may occur at lower concentrations), the known presence of wildlife, and in consideration of the following:

- Presence of high densities of wildlife, threatened species, and/or endemic species with high site fidelity
- Greatest probability of shoreline accumulation
- Shortest timeframe to contact

Table 5-7 outlines the wildlife response priority areas for this activity. At the time of a spill, identification and allocation of wildlife response priority areas 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 4.6 of the EP.

For WA, the Pilbara and Kimberley Regional Oiled Wildlife Plans (DBCA (formerly Department of Parks and Wildlife), 2014) provide useful information relating to wildlife priority response areas in their respective regions.

Table 5-7: Key at-risk species potentially in Priority Protection Areas and open ocean

Species	Exmouth Coastline	Muiron Islands	Murion Islands MMA	Ningaloo Coast WH	Ningaloo MP (State)
Marine turtles (including foraging and inter-nesting areas and significant nesting beaches)	✓	✓	✓	✓	✓
Whale sharks (migration to and from waters at Ningaloo)	✓	✓	✓	✓	✓
Seabirds and/or migratory shorebirds	✓	✓	✓	✓	✓
Cetaceans – migratory whales	✓	✓	✓	✓	✓
Cetaceans – dolphins and porpoises	✓	✓	✓	✓	✓
Dugongs			✓		
Sea snakes	✓	✓	✓	✓	✓

The following statements identify the key parameters upon which a wildlife response need can be based:

- Floating oil at >10 g/m^2 is predicted at Exmouth Coastline, Ningaloo Coast WH, and Ningaloo Marine Park within 36 hour for the modelled scenario.
- There is no predicted shoreline accumulation at response thresholds (>100 g/m^2).
- At sea there are likely to be low numbers of at risk or impacted wildlife, and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and scientific monitoring are more likely to be the focus of response efforts.
- As the surface oil approaches shorelines and as oil accumulates on the shoreline, potential for oiled wildlife impacts are 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 5-8)**.

Table 5-8: WAOWRP Guide for rating wildlife impact of an oil spill (DBCA, 2022)

Wildlife Impact Rating	Low	Medium	High
What is the likely duration of the wildlife response?	<3 days	3-10 days	>10 days
What is the likely total intake of animals?	<10	11-25	>25
What is the likely daily intake of animals?	0-2	2-5	>5
Are threatened species, or species protected by treaty, likely to be impacted, either directly or by pollution of habitat or breeding areas?	No	Yes – possible	Yes – likely
Is there likely to be a requirement for building primary care facility for treatment, cleaning and rehabilitation?	No	Yes – possible	Yes – likely

Tactics

Where there is imminent or actual impact to wildlife, Woodside will activate the Wildlife Division and follow the oiled wildlife incident management framework and implementation plan outlined in the Woodside *Oiled Wildlife Operational Plan*.

In Commonwealth waters, Woodside will be responsible for the planning and implementation of the OWR in its entirety. Noting that at sea, and in comparison to the shoreline, there are likely to be less wildlife impacted by an oil spill and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and integration with scientific monitoring are more likely to be the focus of the OWR.

In State waters, Woodside will conduct the initial first-strike response actions for wildlife and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

If a protracted response is likely, requiring preventative actions and/or wildlife rescue, and formal hand over to the Control Agency (in State waters) has not yet occurred, the Wildlife Division will be responsible for the development of the Wildlife Division portion of the IAP. Preventative actions, such as hazing, along with capture, intake and treatment require a higher degree of planning, approval (licenses) and skills and will be planned for and carried out under the IAP as outlined in the *Oiled Wildlife Operational Plan* and in accordance with the WAOWRP (DBCA, 2022a) and WA OWR Manual (DBAC, 20022b).

The oiled wildlife response technique targets key wildlife populations at risk within Commonwealth open waters and the nearshore waters as described in **Section 4** of the EP.

5.5.2 Environmental performance based on need

Table 5-9: Environmental Performance – Oiled Wildlife Response

Environmental Performance Outcome		Oiled Wildlife Response is conducted in accordance with the Western Australian Oiled Wildlife Response Plan (WAOWRP, 2022) to ensure it is conducted in accordance with legislative requirements to house, release or euthanise wildlife under the *Biodiversity Conservation Act 2016*.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
16	Wildlife response arrangements	16.1	Oiled Wildlife Operational Plan in place and utilised during a response to plan, coordinate, implement and terminate operations	1, 3A, 4
		16.2	Initiate a wildlife first strike response 5 days prior to confirmed or imminent wildlife contact as directed by relevant Operational Monitoring techniques (OM01-05) and in liaison with DBCA	1
17	Wildlife response equipment	17.1	Maintain contract with AMOSC for immediate access to oiled wildlife response equipment.	1, 3C, 3D, 4
		17.2	Maintain contract with OSRL to access additional oiled wildlife response equipment.	1, 3C, 3D, 4
18	Wildlife responders	18.1	Two Oiled Wildlife Team Members to supervise the oiled wildlife operations who have completed an Oiled Wildlife Response Management course.	1, 2, 3B
		18.2	Maintain contract with AMOSC for immediate access to trained oiled wildlife response specialists	1, 3B, 3C
		18.3	Maintain contract with OSRL to access additional trained oiled wildlife response specialists	1, 3B, 3C
		18.4	Open communication line to be maintained between CIMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
19	Management of environmental impacts of response risks	19.1	Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA, and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan.	1

The resulting wildlife response capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to response at identified RPAs.

Under optimal conditions, during the subsea or surface release, the capability available meets the need identified. It indicates that, the wildlife response capability has the following expected performance:

- Undertake OWR first strike response:
  - Mobilisation of operational monitoring (OM01-05) to identify wildlife and RPAs contacted or at imminent risk of contact by hydrocarbons.
- Availability and mobilisation of trained OWR personnel to supervise OWR activities.
- Access to wildlife resources (personnel and equipment) to meet the needs where there are medium or high levels of wildlife impact.

5.6 Waste Management

Waste management is considered a support technique to wildlife response, containment and recovery and shoreline clean-up. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during wildlife response, and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) and debris (e.g. seaweed, sand, woods, and plastics) 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 ensure continuous response operations can be maintained.

All waste management activities will follow the Environment Protection (Controlled Waste) Regulations 2004 and the waste will be managed to minimise final disposal volumes. Waste treatment techniques will consider contaminated solids treatment to allow disposal to landfill and solids with high concentrations of hydrocarbon will be treated and recycled where possible or used in clean fill if suitable.

The waste products would be transported from response locations to the nearest suitable staging area/waste transfer station for treatment, disposal or recycling. Waste will be transferred with appropriately licensed vehicles. Containers will be available for temporary waste storage and will be:

- labelled with the waste type
- provided with appropriate lids to prevent waste being blown overboard
- bunded if storing liquid wastes.
- processes will be in place for transfers of bulk liquid wastes and include:
  - inspection of transfer hose undertaken prior to transfer
  - watchman equipped with radio visually monitors loading hose during transfer
  - tank gauges monitored throughout operation to prevent overflow

The *Oil Spill Preparedness Waste Management Support Plan* details the procedures, capability and capacity in place between Woodside and its primary waste services contractor to manage waste volumes generated from response activities.

5.6.1 Response need based on predicted consequence parameters

Table 5-10: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	Oiled wildlife response – approximately 1 m^3 of oily solid and liquid waste generated for each wildlife unit cleaned

5.6.2 Environmental performance based on need

Table 5-11: Environmental Performance – Waste Management

Environmental Performance Outcome		To minimise further impacts, waste will be managed, tracked and disposed of in accordance with laws and regulations.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
20	Waste Management	20.1	Contract with waste management services for transport, removal, treatment and disposal of waste	1, 3A, 3B, 3C, 4
		20.2	Access to at least 43 m^3 of solid and liquid waste storage available within 2 days upon activation of 3rd party contract.	
		20.3	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		20.4	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		20.5	Open communication line to be maintained between CIMT and waste management services to ensure the reliable flow of accurate information between parties.	
		20.6	Waste management to be conducted in accordance with Australian laws and regulations	1, 3A, 3B
		20.7	Waste management services available and employed during response	1, 3A, 3B, 3C, 4
21	Management of environmental impacts of response risks	21.1	All oiled wildlife response sites zoned and marked before operations commence to prevent secondary contamination and minimise the mixing of clean and oiled waste	1, 3A, 3B, 3C, 4

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management at identified RPAs.

Given that modelling predicts that there will be no floating oil at recoverable threshold concentrations and no shoreline impact at feasible clean-up threshold concentrations, the only waste management requirements will be for oiled wildlife response and the capability available therefore exceeds the need identified.

It indicates that the waste management capability has the following expected performance:

- Woodside currently has access to service providers committed to providing approximately 120,000 m^3 liquid waste over the duration of the spill
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section
- 6.6.

5.7 Scientific monitoring

A scientific monitoring program (SMP) would be activated following a Level 2 or 3 unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-economic) for the entire predicted EMBA and in particular, any identified Pre-emptive Baseline Areas (PBAs) for the credible spill scenario(s) or other identified unplanned hydrocarbon releases associated with the Petroleum Activities Program (PAP) (refer to Table 2-1: PAP credible spill scenarios).

The outputs of the stochastic hydrocarbon spill modelling are used to assess the environmental risk, in terms of delineating which areas of the marine environment are predicted to be exposed to hydrocarbons exceeding environmental threshold concentrations (refer to Table 2-5, Section 2.3.4). The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the EMBA. The Petroleum Activities Program worst-case credible spill scenario define the EMBA and are the basis of the SMP approach presented in this section.

It should be noted that the resulting SMP receptor locations differ from the Response Protection Areas (RPAs) presented and discussed in Section 3 of this document due to the applicability of different hydrocarbon threshold levels. The SMP would be informed by the data collected via the operational monitoring program (OMP) studies, however, it differs from the OMP in being a long-term program independent of, and not directing, the operational oil spill response or monitoring of impacts from response activities (refer to Section 5.1) for operational monitoring overview).

Key objectives of the Woodside oil spill scientific monitoring program are:

- Assess the extent, severity and persistence of the environmental impacts from the spill event; and
- Monitor subsequent recovery of impacted key species, habitats and ecosystems.

The SMP comprises ten targeted environmental monitoring programs to assess the condition of a range of physico-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 are as follows:

- SM01 – Assessment of the presence, quantity and character of hydrocarbons in marine waters (linked to OM01 to OM03)
- SM02 – Assessment of the presence, quantity and character of hydrocarbons in marine sediments (linked to OM01 and OM05)
- SM03 – Assessment of impacts and recovery of subtidal and intertidal benthos
- SM04 – Assessment of impacts and recovery of mangroves/saltmarsh habitat
- SM05 – Assessment of impacts and recovery of seabird and shorebird populations
- SM06 – Assessment of impacts and recovery of nesting marine turtle populations
- SM07 – Assessment of impacts to pinniped colonies including haul-out site populations
- SM08 – Desktop assessment of impacts to other non-avian marine megafauna
- SM09 – Assessment of impacts and recovery of marine fish (linked to SM03)
- SM10 – Assessment of physiological impacts to important fish and shellfish species (fish health and seafood quality/safety) and recovery.

These SMPs have been designed to cover all key tropical and temperate habitats and species within Australian waters and broader, if required. A planning area for scientific monitoring is also identified to acknowledge potential hydrocarbon contact below the environmental

threshold concentrations and beyond the EMBA. This planning area has been set with reference to the entrained low exposure value of 10 ppb detailed in NOPSEMA Bulletin #1 Oil Spill Modelling (2019), as shown in Figure 5-1.

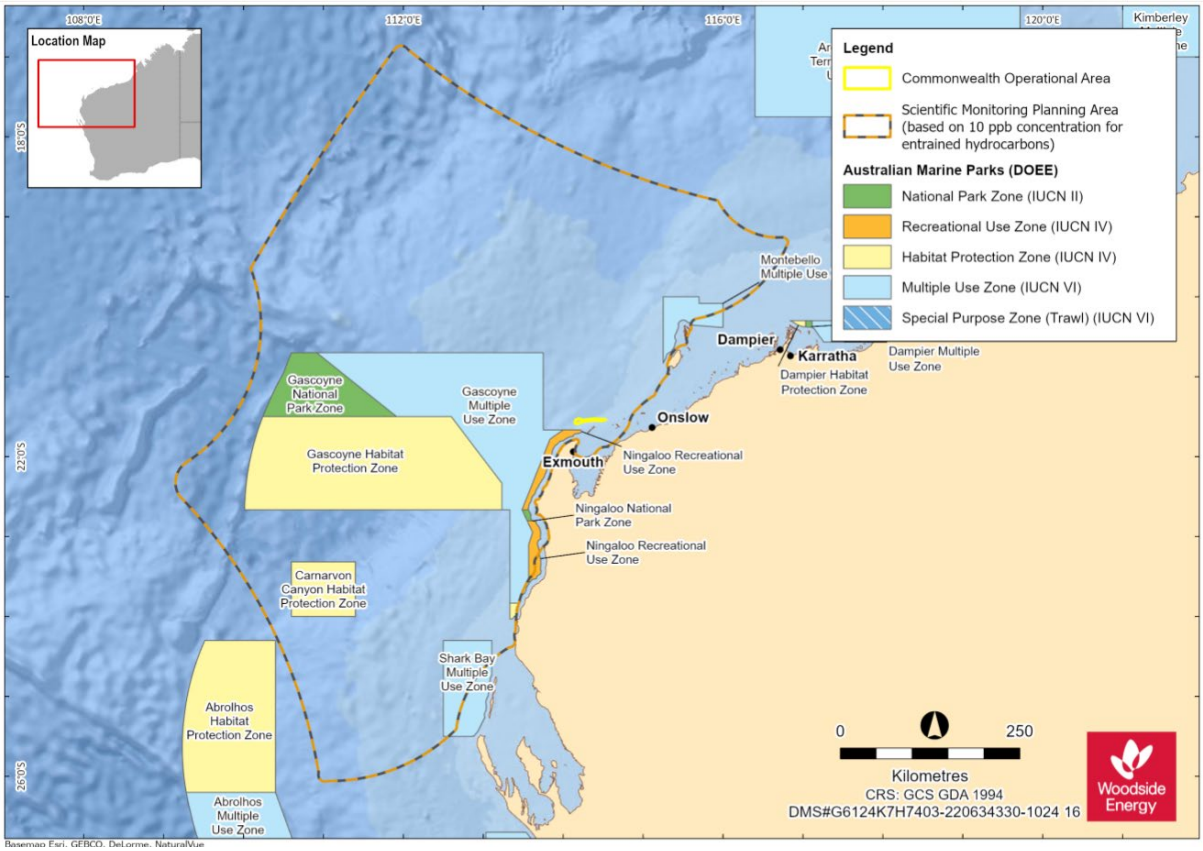

Figure 5-1: The planning area for scientific monitoring based on the area potentially contacted by the low (below ecological impact) entrained hydrocarbon threshold of 10 ppb in the event of the worst-case credible spill scenario (CS-01).

Please note that Figure 5-1 represents the overall combined extent of the oil spill model outputs based on 200 replicate simulations over an annual period for CS-01 and therefore represents the largest spatial boundaries of multiple CS-01 oil spill combinations, not the spatial extent of a single CS-01 spill.

5.7.1 Scientific Monitoring Deployment Considerations

Scientific Monitoring Deployment Considerations	
Existing baseline studies for sensitive receptor locations predicted to be affected by a spill	Pre-emptive Baseline Areas (PBAs) of the following two categories: • PBAs within the predicted <10-day hydrocarbon contact time prediction: The approach is to conduct a desktop review of available and appropriate baseline data for key receptors for locations (if any) that are potentially impacted within 10 days of a spill and look to conduct baseline data collection to address data gaps and demonstrate spill response preparedness. Planning for baseline data acquisition is typically commenced pre-PAP and execution of studies undertaken with consideration of weather, receptor type, seasonality and temporal assessment requirements. • PBAs >10 days time to predicted hydrocarbon contact in the event of an unplanned hydrocarbon release (from Macedon operational activities). SMP activation (as per the Macedon Operations (Cwth) First Strike Plan) directs the SMP team to follow the steps outlined in the SMP Operational Plan. The steps include: checking the availability and type of existing baseline data, with particular reference to any Pre-emptive Baseline Areas (PBAs) identified as >10 days to hydrocarbon contact. Such information is used to identify response phase PBAs and plan for the activation of SMPs for pre-emptive (i.e. pre-hydrocarbon contact) baseline assessment.
Pre-emptive Baseline in the event of a spill	Activation of SMPs in order to collect baseline data at sensitive receptor locations with predicted hydrocarbon contact time >10 days (as documented in ANNEX C).
Survey platform suitability and availability	In the event of the SMP activation, suitable survey platforms are available and can support the range of equipment and data collection methodologies to be implemented in nearshore and offshore marine environments.
Trained personnel to implement SMPs suitable and available.	Access to trained personnel and the sampling equipment contracted for scientific monitoring via a dedicated scientific monitoring program standby contract.
Met-ocean conditions	The following met-ocean conditions have been identified to implement SMPs: • Waves <1 m for nearshore systems • Waves <1.5 m for offshore systems • Winds <20 knots • Daylight operations only SMP implementation will be planned and managed according to HSE risk reviews and the met-ocean conditions on a day to day basis by SMP operations.

5.7.2 Response planning assumptions

Response Planning Assumptions	
Pre-emptive Baseline Areas (PBAs)	Pre-emptive Baseline Areas (PBAs) identified through the application of defined hydrocarbon impact thresholds during the Quantitative Spill Risk Assessment process and a consideration of the minimum time to contact at receptor locations fall into two categories: • PBAs for which baseline data exist or are planned for and data collection may commence pre-PAP (≤ 10 days minimum time to contact). • PBAs (> 10 days minimum time to contact) for which baseline data may be collected in the event of an unplanned hydrocarbon release. Response phase

	PBAs are prioritised for SMP activities due to vulnerability (i.e. time to contact and environmental sensitivity) to potential impacts from hydrocarbon contact and an identified need to acquire baseline data. Time to hydrocarbon contact of >10 days has been identified as a minimum timeframe within which it is feasible to plan and mobilise applicable SMPs and commence collection of baseline (pre-hydrocarbon contact) data, in the event of an unplanned hydrocarbon release from the Macedon Operations facility. Pre-emptive Baseline Areas for the Macedon Operations facility are identified and listed in ANNEX D, Table D-1. The PBAs together with the situational awareness (from the operational monitoring) are the basis for the response phase SMP planning and implementation.
Pre-Spill	<u>Macedon Operations (Cwth)</u> A review of existing baseline data for receptor locations (refer to Annex D) with potential to be contacted by surface, dissolved or entrained hydrocarbons at environmental thresholds within ≤10 days, relating to the credible hydrocarbon release for Macedon facility has identified the following: • Ningaloo Coast (North/ Northwest Cape, Middle and South) (WHA, and State Marine Park) • Barrow Island (including State Nature Reserves, State Marine Park and Marine Management Area) • Muiron Islands (WHA, State Marine Management Area) Australian Marine Parks (AMP) potentially affected include: • Gascoyne AMP • Ningaloo AMP • Montebello AMP All the AMPs are located in offshore waters where hydrocarbon exposure is possible from floating hydrocarbons (on surface waters) and in the upper water column (0-20 m depth range, approximately).
In the Event of a Spill	Receptor locations with >10 days to hydrocarbon contact, as well as the wider area, will be investigated and identified by the SMP team (in the Environment Unit of the CIMT) as the spill event unfolds and as the situational awareness provided by the OMPs permits delineation of the spill affected area (for example, updates to the spill trajectory tracking). The full list is presented in Annex D, based on the PAP credible spill scenario (Table 2-1). The unfolding spill affected area predictions and confirmation of appropriate baseline data will determine the selection of receptor locations and SMPs to be activated in order to gather pre-emptive (pre-hydrocarbon contact) data. Refer to ANNEX C for further details on scientific monitoring plan implementation and delivery). The timing of SMP activation and mobilisation of the individual SMPs to undertake data collection will be decided and documented by the Woodside SMP team following the process outlined in the SMP Operational Plan. In the event key receptors within geographic locations that are potentially impacted after 10 days following a spill event or commencement of the spill and where adequate and appropriate baseline data are not available, there will be a response phase effort to collect baseline data for the following purposes: i. Priority will be given to the collection of baseline data for receptors predicted to be within the spill affected area prior to hydrocarbon contact. The process is initiated with the investigation of available baseline and time to hydrocarbon contact (>10 days which is sufficient time to mobilise SMP teams and acquire data before hydrocarbon contact). With reference to the [project/operation] facility, priority would be focused on [location].

	ii. Collect baseline data for receptors predicted to be outside the spill affected area so reference datasets for comparative analysis with impacted receptor types can be assessed post-spill.
Baseline Data	A summary of the spill affected area and receptor locations as defined by the EMBA for the PAP (PAP) credible spill scenario(s) is presented Section 2.3.1 The key receptors at risk by location and corresponding SMPs based on the EMBA for the PAP are presented in ANNEX D, as per credible spill event scenario(s). This matrix maps the receptors at risk with their location and the applicable SMPs that may be triggered in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. Receptor locations and applicable SMPs are colour coded to highlight possible time to contact based on receptor types and locations. The status of baseline studies relevant to the PAP are tracked by Woodside through the maintenance of a Corporate Environment Environmental Baseline Database (managed by the Woodside Environmental Science team), as well as accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA) [1] (refer to ANNEX C: Oil Spill Scientific Monitoring Program).

5.7.3 Summary – scientific monitoring

The resulting scientific monitoring capability has been assessed against the PAP credible spill scenario(s). The range of techniques provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. All 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 SMP's main objectives can be met, with no additional, alternative or improved control measures providing further benefit.

5.7.4 Response planning: need, capability and gap – scientific monitoring

The receptor locations identified in Annex D provide the basis of the SMPs likely to be selected and activated. Once the Woodside SMP Delivery team and the SMP standby contractor have been stood up and the exact nature and scale of the spill becomes known, the SMPs to be activated will be confirmed as per the process set out in the SMP Operational.

Scope of SMP Operations in the event of a hydrocarbon spill

Receptor locations of interest for the SMP during the response phase are:

- Ningaloo Coast (North/ Northwest Cape, Middle and South) (WHA, and State Marine Park)
- Barrow Island (including State Nature Reserves, State Marine Park and Marine Management Area)
- Muiron Islands (WHA, State Marine Management Area)
- Gascoyne AMP
- Ningaloo AMP
- Montebello AMP

Documented baseline studies are available for certain receptor locations including the Ningaloo Coast and Muiron Islands (Annex D, Table D-2). The SMP technique; however, would be to deploy SMP teams to maximise the opportunity to collect pre-emptive data at

[1] https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort

sensitive receptor locations. The exact locations where hydrocarbon contact occurs may be unpredictable, SM01 would be mobilised as a priority to be able to detect hydrocarbons and track the leading edge of the spill to verify where hydrocarbon contact occurs which will assist with where SMP resources are a priority need to obtain pre-emptive baseline data.

The ALARP assessment for the SMP (Section 6.7) considers alternate, additional, and/or improved control measures on each selected response technique.

5.7.5 Environmental performance based on need

Table 5-12: Scientific monitoring

Environmental Performance Outcome		Woodside can demonstrate preparedness to stand up the SMP to quantitatively assess and report on the extent, severity, persistence and recovery of sensitive receptors impacted from the spill event		
Control measure		**Performance Standard**		**Measurement Criteria**
22	• Woodside has an established and dedicated SMP team comprising the Environmental Science Team and additional Environment Advisers within the HSEQ Function.	22.1	SMP team comprises a pool of competent Environment Advisers (stand up personnel) who receive training regarding the SMP, SMP activation and implementation of the SMP on an annual basis	• Training materials • Training attendance registers • Process that maps minimum qualification and experience with key SMP role competency and a tracker to manage availability of competent people for the SMP team including redundancy and rostering
23	• Woodside have a SMP standby contractor to provide scientific personnel to resource a base capability of one team per SMP (SM01-SM10, see Table C-2, ANNEX C) as detailed in Woodside's SMP standby contractor Implementation Plan, to implement the oil spill scientific monitoring programs. The availability of relevant personnel is reported to Woodside on a monthly basis via a simple report on the base-loading availability of people for each of the SMPs comprising field work for data collection (SMP resourcing report register. • In the event of a spill and the SMP is activated, the base-loading availability of scientific personnel will be provided by SMP standby contractor for the individual SMPs and where gaps in resources are identified, SMP standby contractor/Woodside will seek additional personnel (if needed) from other sources including Woodside's Environmental Services Panel.	23.1	Woodside maintains the capability to mobilise personnel required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08): • Personnel are sourced through the existing standby contract with SMP standby, as detailed within the SMP Implementation Plan. • Scientific Monitoring Program Implementation Plan describes the process for standing up and implementing the scientific monitoring programs. • SMP team stand up personnel receive training regarding the stand up, activation and implementation of the SMP on an annual basis	• HSP Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. • SMP resource report of personnel availability provided by SMP contractor on monthly basis (SMP resourcing report register). • Training materials • Training attendance registers • Competency criteria for SMP roles • SMP annual arrangement testing and reporting
24	• Roles and responsibilities for SMP implementation are captured in Table C-1 (Annex C) and the SMP team (as per the organisational structure of the CIMT) is outlined in SMP Operational Plan. Woodside has a defined Crisis and Incident Management structure including Source Control, Operations, Planning and Logistics functions to manage a loss of well control response. • SMP Team structure, interface with SMP standby contractor (standby SMP contractor) and linkage to the CIMT is presented in Figure C-1, ANNEX C • Woodside has a defined Command, Control and Coordination structure for Incident and Emergency Management that is based on the AIIMS framework utilised in Australia. • Woodside utilises an online Incident Management Information System (IMIS) to coordinate and track key incident management functions. This includes specialist modelling programs, geographic information systems (GIS), as well as communication flows within the Command, Control and Coordination structure. • SMP activated via the First Strike Plan. • Step by step process to activation of individual SMPs provided in the SMP Operational Plan. • All decisions made regarding SMP logged in the online IMIS (SMP team members trained in using Woodside's online Incident Management System) • SMP component input to the CIMT Incident Action Plan (IAP) as per the identified CIMT timed sessions and the SMP IAP logged on the online IMIS • Woodside Environmental Science Team provide awareness training on the activation and stand-up of the Scientific Monitoring Programme (SMP) for the Environment Advisers in Woodside who are listed on the SMP team on an annual basis. • Woodside Environmental Science Team provide awareness training on the activation and stand-up of the Scientific Monitoring Programme (SMP) for the SMP standby contractor. • Woodside Environmental Science Team co-ordinates an annual SMP arrangement testing exercise which the SMP standby contractor. SMP team participates in since 2016 (report on 2016 SMP simulation) and SMP standby contractor the SMP arrangements (people and equipment availability) tested annually since 2016.	24.1	• Woodside have established an SMP organisational structure and processes to stand up and deliver the SMP.	• SMP Oil Spill Scientific Monitoring Operational Plan • SMP Implementation Plan • SMP annual arrangement testing and reporting

25	• Chartered and mutual aid vessels. • Suitable vessels would be secured from the Woodside support vessels, regional fleet of vessels operated by Woodside and other operators and the regional charter market. • Vessel suitability will be guided by the need to be equipped to operate grab samplers, drop camera systems and water sampling equipment (the individual vessel requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C). • Nearshore mainland waters could use the same approach as for open water. Smaller vessels may be used where available and appropriate. Suitable vehicles and machinery for onshore access to nearshore SMP locations would be provided by Woodside's transport services contract and sourced from the wider market. • Dedicated survey equipment requirements for scientific monitoring range from remote towed video and drop camera systems to capture seabed images of benthic communities to intertidal/onshore surveying tools such as quadrats, theodolites and spades/trowels, cameras and binoculars (specific survey equipment requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C)). Equipment would be sourced through the existing SMP standby contract with SMP standby contractor for SMP resources and if additional surge capacity is required this would be available through the other Woodside Environmental Services Panel Contractors and specialist contractors. SMP standby contractor can also address equipment redundancy through either individual or multiple suppliers. MoUs are in place with one marine sampling equipment companies and one analytical laboratory (SMP resourcing report register). • Availability of SMP equipment for offshore/onshore scientific monitoring team mobilisation is within one week to ten days of the commencement of a hydrocarbon release. This meets the SMP mobilisation lead time that will support meeting the response objective of 'acquire, where practicable, the environmental baseline data prior to hydrocarbon contact required to support the post-response SMP.	25.1	Woodside maintains standby SMP capability to mobilise equipment required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08): • Equipment are sourced through the existing standby contract with SMP standby contractor, as detailed within the SMP Implementation Plan.	• HSP Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. • SMP standby monthly resource reports of equipment availability provided by SMP contractor (SMP resourcing report register). • SMP annual arrangement testing and reporting
26	Woodside's SMP approach addresses the pre-PAP acquisition of baseline data for Pre-emptive Baseline Areas (PBAs) with ≤10 days if required following a baseline gap analysis process. Woodside maintains knowledge of Environmental Baseline data through: • Documentation annual reviews of the Woodside Baseline Environmental Studies Database, and specific activity baseline gap analyses. • Accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA) (refer to ANNEX C: Oil Spill Scientific Monitoring Program).	26.1	• Annual reviews of environmental baseline data • PAP specific Pre-emptive Baseline Area baseline gap analysis	• Annual review/update of Woodside Baseline Environmental Studies Database • Desktop review to assess the environmental baseline study gaps completed prior to EP submission • Accessing baseline knowledge via the SMP annual arrangement testing

Environmental Performance Outcome		SMP plan to acquire response phase monitoring targeting pre-emptive baseline data achieved		
Control measure		**Performance Standard**		**Measurement Criteria**
27	Woodside's SMP approach addresses: • Scientific data acquisition for PBAs >10 days to hydrocarbon contact and activated in the response phase and • Transition into post-response SMP monitoring.	27.1	**Pre-emptive Baseline Area (PBA) baseline data acquisition in the response phase** If baseline data gaps are identified for PBAs predicted to have hydrocarbon contact in >10 days, there will be a response phase effort to collect baseline data. Priority in implementing SMPs will be given to receptors where pre-emptive baseline data can be acquired or improved. SMP team (within the Environment Unit of the CIMT) contribute SMP component of the CIMT Planning Function in development of the IAP.	• Response SMP plan • Woodside's online Incident Management System Records • SMP component of the Incident Action Plan.
		27,2	**Post Spill contact** For the receptors contacted by the spill in where baseline data are available, SMPs programs to assess and monitor receptor condition will be implemented post spill (i.e. after the response phase):	• SMP planning document • SMP Decision Log • Incident Action Plans (IAPs)

Environmental Performance Outcome	Implementation of the SMP (response and post-response phases)	
Control measure	**Performance Standard**	**Measurement Criteria**

28	• Scientific monitoring will address quantitative assessment of environmental impacts of a level 2 or 3 spill or any release event with the potential to contact sensitive environmental receptors. The SMP comprises ten targeted environmental monitoring programs. • SMP supporting documentation: 1. Oil Spill Scientific Monitoring Operational Plan; (2) SMP Implementation Plan and (3) SMP Process and Methodologies Guideline • The Oil Spill Scientific Monitoring Operational Plan details the process of SMP selection, input to the IAP to trigger operational logistic support services. Methodology documents for each of the ten SMPs are accessible detailing equipment, data collection techniques and the specifications required for the survey platform support. • The SMP standby contractor holds a Woodside SMP implementation plan detailing activation processes, linkage with the Woodside SMP team and the general principles for the planning and mobilisation of SMPs to deliver the individual SMPs activated. Monthly resourcing report are issued by the SMP standby contractor (SMP resourcing report register. All SMP documents and their status are tracked via SMP document register.	28.1	**Implementation of SM01** SM01 will be implemented to assess the presence, quantity and character of hydrocarbons in marine waters during the spill event in nearshore areas	Evidence SM01 has been triggered: • Documentation as per requirements of the SMP Operational Plan • Woodside's online Incident Management System Records. • SMP component of the IAP • SMP data records from field
		28.2	**Implementation of SM02-SM10** SM02-SM10 will be implemented in accordance with the objectives and activation triggers as per Table C-2 of Annex C.	Evidence SMPs have been triggered: • Documentation as per requirements of the SMP Operational Plan • Woodside's online Incident Management System Records. • SMP component of the IAP • SMP Data records from field
		28.3	**Termination of SMP plans** The Scientific Monitoring Program will be terminated in accordance with termination triggers for the SMP's detailed in Table C-2 of Annex C, and the Termination Criteria Decision-tree for Oil Spill Environmental Monitoring (Figure C-3 of Annex C):	Evidence of Termination Criteria triggered: • Documentation and approval by relevant persons/ organisations to end SMPs for specific receptor types.

5.8 Incident Management System

The Incident Management System 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.

5.8.1 Incident action planning

The CIMT will be required to collect and interpret information from the scene of the incident to determine support requirements to the site-based CIMT, develop an incident action plan (IAP) and assist the CIMT 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 techniques to control the incident are appropriate to the situation at the time.

5.8.2 Operational NEBA process

In the event of a response Woodside will confirm that the response techniques adopted at the time of Environment Plan/ Oil Pollution Emergency Plan (EP/ OPEP) acceptance remain appropriate to reduce the consequences of the spill. This process verifies that there is a continuing net environmental benefit associated with continuing the response technique through the operational NEBA process. This process manages the environmental risks and impacts of response techniques during the spill response, an operational NEBA will be undertaken throughout the response, for each operational period.

The operational NEBA will consider the risks and benefits of conducting and response activity. For example, if vessels are required for access to nearshore or onshore areas, anchoring locations will be selected to minimise disturbance to benthic habitats. Vessel cleanliness would be commensurate with the receiving environment. The operational NEBA will consider the risks and benefits of conducting other response techniques.

The operational NEBA process is also used to terminate a response. Using data from operational and scientific monitoring activities the response to a hydrocarbon spill will be terminated in accordance with the termination process outlined in the Oil Pollution Emergency Arrangements (Australia). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

5.8.3 Consultation engagement process

Woodside will ensure 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 persons/ organisations in the region (identified in the First Strike Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

5.8.4 Environmental performance based on need

Table 5-13: Environmental Performance – Incident Management System

Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
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 • External Stakeholder Engagement Procedure	
23	Personnel required to support any response	23.1	Action planning is an ongoing process that involves continual review to ensure 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 ensure that 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 CIMT, develop an Incident Action Plan (IAP) and assist with the execution of that plan.	

Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.9)**
		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.	
		23.7	Follow the OPEA, Operational Plans, FSPs, support plans and the IAPs developed.	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

5.9 Measurement criteria for all response techniques

Woodside verifies compliance with environmental performance outcomes and standards through four primary mechanisms. The aforementioned performance tables identify which of these four mechanisms monitors the readiness and records the effectiveness and performance of the control measures adopted.

1. The Incident Management System

The Incident Management System (IMS) supports the implementation of the Emergency and Crisis Management Procedure. The IMS provides a near real-time, single source of information for monitoring and recording an incident and measuring the performance of those control measures.

The Emergency and Crisis Management Procedure defines the management framework, including roles and responsibilities, to be applied to any size incident (including hydrocarbon spills). The organisational structure required to manage an incident is developed in a modular fashion and is based on the specific requirements of each incident. The structure can be scaled up or down.

The Incident Action Plan (IAP) process formally documents and communicated the:

- Incident objectives
- Status of assets
- Operational period objectives
- Response techniques (defined during response planning)
- The effectiveness of response techniques.

The information captured in the IMS (including information from personal logs and assigned tasks/close outs) confirms the response techniques implemented remain appropriate to reduce the consequences of the spill. The system also records all information and data that can be used to support the site-based IMT, development and the execution of the IAP.

2. The S&EM Competency Dashboard

The S&EM competency dashboard records the number of trained and competent responders that are available across Woodside, and some external providers, to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-2 shows the minimum manning numbers for the different hydrocarbon spill response roles and the number of qualified persons against those roles.

Woodside's pool of trained responders is composed of but not limited to personnel from the following organisations:

- Woodside internal
- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- AMSA
- Woodside contracted workforce

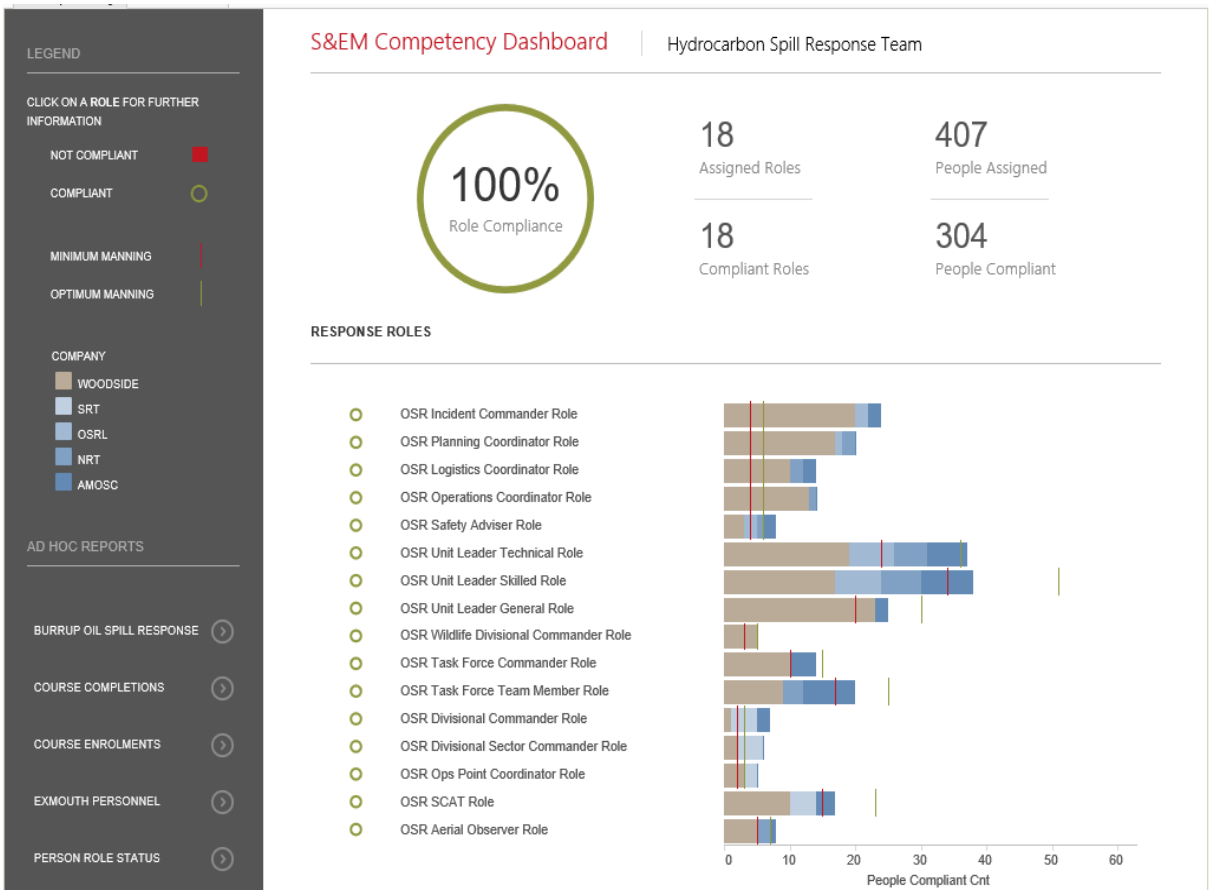

Figure 5-2: Example screen shot of the HSP competency dashboard

The Dashboard is one of Woodside's key means of monitoring its readiness to respond. It also and shows that Woodside can meet the requirements of the environmental performance standard that relate to filling certain response roles.

Figure 5-3 shows deeper dive into the Ops Point Coordinator role and the training modules required to show competence.

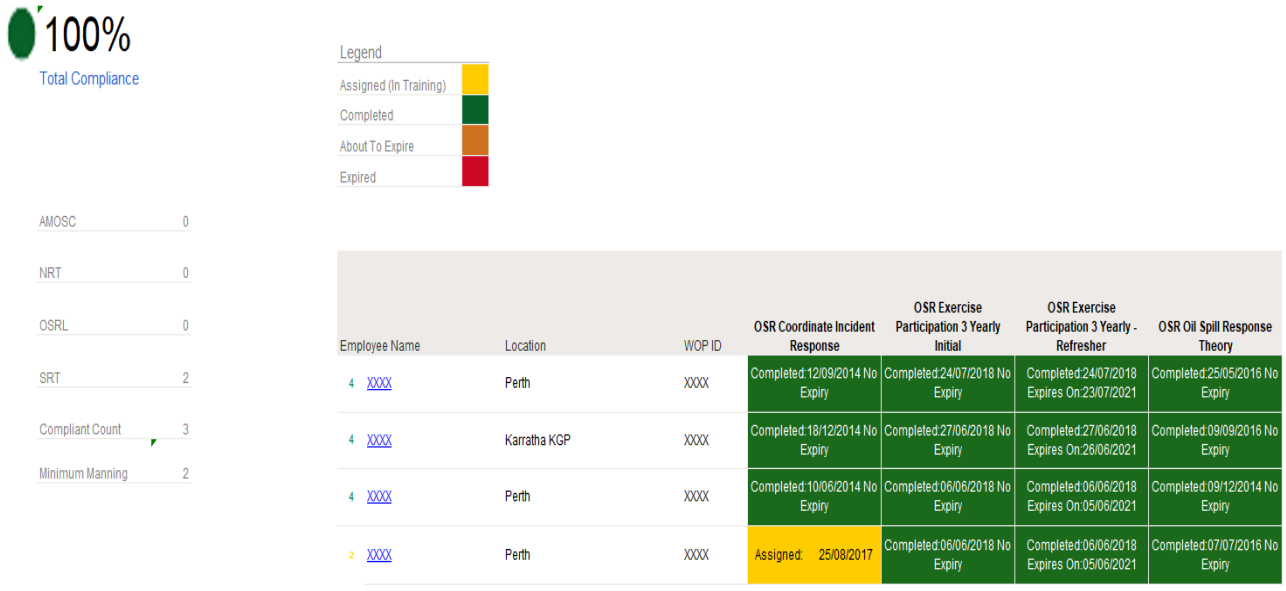

Figure 5-3: Example screen shot for the Ops Point Coordinator role

3. The Hydrocarbon Spill Preparedness ICE Assurance Process

The Hydrocarbon Spill Response Team has developed a Hydrocarbon Spill Preparedness and Response Internal Control Environment (ICE) process to align and feed into the Woodside Management System Assurance process for hydrocarbon spill. The process tracks compliance over four key control areas:

A. **Plans** – Ensures all plans (including: Oil Pollution Emergency Arrangements, first strike plans, operational plans, support plans and tactical response plans) are current and in line with regulatory and internal requirements.

B. **Competency** – Ensures the competency dashboard is up to date and there are the minimum competency numbers across CIMT, CMT and hydrocarbon spill response roles. The hydrocarbon spill training plan and exercise schedule, including testing of arrangements is also tracked. The Testing of Arrangements (TOA) register tracks the testing of all hydrocarbon spill response arrangements, key contracts and agreements in place with internal and external parties to ensure compliance.

C. **Capability** – Tracks and monitors capability that could be required in a hydrocarbon incident, including but not limited to: integrated fleet[3] vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.

D. **Compliance and Assurance** – Ensures all regulator inspection outcomes are actioned and closed out, the global legislation register is up to date and that the key assurance components are tracked and managed. Assurance activities (including Audits) conducted on memberships with key Oil Spill Response Organisations (OSROs) including AMOSC and OSRL are also tracked and recorded in the ICE.

The ICE assurance process records how each commitment listed in the performance tables above is managed to ensure ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the S&EM Function.

The completion of the assurance checks (over and above the ICE process) is also applied via the Woodside Integrated Risk and Compliance System (WiRCs) and subject to the requirements of Woodside's Provide Assurance Procedure.

4. The Hydrocarbon Spill Preparedness and Response Procedure

This procedure sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this procedure does not apply to scenarios relating to gas releases in the marine environment).

This procedure details the:

- Requirement for an Oil Pollution Emergency Plan (OPEP) to be developed, maintained, reviewed, and approved by appropriate regulators (where applicable) including:
  - Defining how spill scenarios are developed on an activity specific basis
  - Developing and maintaining all hydrocarbon spill related plans
  - Ensuring the ongoing maintenance of training and competency for personnel
  - Developing the testing of spill response arrangements
  - Maintaining access to identified equipment and personnel.
- Planning for hydrocarbon spill response preparedness
- Accountabilities for hydrocarbon spill response preparedness

[3] 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

- Spill training requirements
- Requirements for spill exercising / testing of spill response arrangements
- Spill equipment and services requirements.

The procedure also details the roles and responsibilities of the dedicated Woodside Hydrocarbon Spill Preparedness team. This team is responsible for:

- Assuring that Woodside hydrocarbon spill responders meet competency requirements.
- Establishing the competency requirements, annual training schedule and a training register of trained personnel.
- Establishing and maintaining the total numbers of trained personnel required to provide an effective response to any hydrocarbon spill incident.
- Ensuring equipment and services contracts are maintained
- Establishing OPEPs
- Establishing OPEAs
- Priority response receptor determination
- ALARP determination
- Ensuring compliance and assurance is undertaken in accordance with external and internal requirements

6 ALARP EVALUATION

This Section should be read in conjunction with Section 5 which is the capability planned for this activity.

6.1 Operational Monitoring – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation 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 Operational Monitoring – Control Measure Options Analysis

6.1.1.1 Alternative Control Measures

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Aerostat (or similar inflatable observation platform) for localised aerial surveillance.	Lead time to Aerostat surveillance is disproportionate to the environmental benefit. The system also provides a very limited field of visibility around the vessel it is deployed from.	Long lead time to access (>10 days). Each system would require an operator to interpret data and direct vessels accordingly. Requires multiple systems for shoreline use.	Purchase cost per system approx. $300,000.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**
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 current capability meets the need, but additional units are available if required..	**No**

6.1.1.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional personnel trained to use systems.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to monitoring data used to inform all other response techniques. No improvement required.	No improvement can be made, all personnel in technical roles e.g. intelligence unit are trained and competent on the software systems. Personnel are trained and exercised regularly. Use of the software and systems forms part of regular work assignments and projects.	Cost for training in-house staff would be approx. $25,000.	This option is not adopted as the current capability meets the need.	**No**
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy on location at manned facility, additional needs are met from WEL owned stocks in King Bay Support Facility (KBSF) and Exmouth or can be provided by service provider.	Cost for an additional satellite tracking buoy would be $200 per day or $6,000 to purchase.	This option is not adopted as the current capability meets the need, but additional units are available if required.	**No**
Additional trained aerial observers.	Current capability meets need. WEL has access to a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL.	Current capability meets need. WEL has a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL Aviation standards & guidelines ensure all aircraft crews are competent for their roles. WEL maintains a pool of trained and competent aerial observers with various home base locations to be called upon at the time of an incident. Regular audits of oil spill response organisations ensure training and competency is maintained.	Cost for additional trained aerial observers would be $2,000 per person per day.	This option is not adopted as the current capability meets the need, but additional observers are available via response contractors if required.	**No**

6.1.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has person on call to respond from their own location.	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of $50,000 for 24hr access plus an initial $5,000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**
Night time aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The images would be of low quality and as such the variable is not adopted.	Flights will only occur when deemed safe by the pilot. The risk of night operations, is disproportionate to the benefit gained, as images from sensors (IR, UV, etc). will be low quality. Flight time limitations will be adhered to.	No improvement can be made without risk to personnel health and safety and breaching Woodside's golden rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	**No**
Faster mobilisation time (for water quality monitoring).	Due to the restriction on accessing the spill location on Day one there is no environmental benefit in having vessels available from day one. The cost of having dedicated equipment and personnel is disproportionate to the environmental benefit. The availability of vessels and personnel meets the response need. Shortening the timeframes for vessel availability would require dedicated response vessels on standby in KBSF. The cost and organisational complexity of employing two dedicated response vessels (approximately $15M/year per vessel) is considered disproportionate to the potential environmental benefit to be realised by adopting this delivery options.	Operations are not feasible on day 1 as the hydrocarbon will take time to surface, and Volatility has potential to cause health concerns within the first 24 hours of the response.	Further to the standby vessel costs, purchase of required equipment would be approximately $200,000. Ongoing costs per annum for hire and pre-positioning, for life of asset/ activity, would be larger than the purchase cost. For the associated dedicated equipment plus personnel living locally on short-notice mobilisation, the cost would be approximately $1M per annum, which is disproportionate to the incremental benefit this would provide. Assets are already available on day one. Two integrated fleet vessels are available from day one, however these could be tasked with other operations.	This option is not adopted as the area could not be accessed earlier due to safety considerations. Additionally, the cost and complexity of implementation outweighs the benefits.	**No**

6.1.2 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.2 Source Control – ALARP Assessment

Woodside has based its response planning on the worst-case credible scenarios (as described in Section 2.2). This includes the following selection of source control and well intervention techniques which would be initiated concurrently:

- ROV intervention
- debris clearance and/or removal
- capping stack deployment
- relief well drilling

6.2.1 ROV Intervention

Following confirmation of an emergency event, Woodside would mobilise inspection class ROVs to assess the status of the wellhead. Woodside estimates the ROV available on the MODU can be deployed for this purpose within 48 hours. Work class ROVs for well intervention are also available through the existing frame agreements and are available for deployment within seven days (**Table 6-1**). It is not expected that any additional regulatory approvals would be required as inspection, maintenance and repair is within the scope of activities for the *Woodside Energy Ltd Well Construction Campaign (2023-2024) Safety Case* as well as the scope of activities for contracted Frame Agreement vessels.

As Woodside holds Frame Agreements for vessels along with contracts for ROV providers and pilots, inspection activities using ROVs are expected to commence within seven days.

A hydraulic accumulator contained as part of the SFRT can be mobilised and deployed with well intervention attempted within 11 days.

Table 6-1: ROV timings

ROV inspection duration for Scarborough Wells	Time Estimate (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 Emergency Response Planning Guideline details the mobilisation and resource requirements for implementing this strategy. Debris clearance may be required as a prerequisite to deployment of the capping stack. The AMOSC SFRT would be mobilised from Fremantle. The mobilisation of the SFRT would take place in parallel with mobilisation of the capping stack to ensure initial ROV surveys and debris clearance have commenced before the arrival of the capping stack. The SFRT comprises ROV-deployed cutters and tools that are used to remove damaged or redundant items from the wellhead and allow improved access to the well. The SFRT can be mobilised and deployed with well intervention attempted within 11 days.

6.2.2.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661) and anticipates 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 Woodside Source Control Emergency Response Planning Guideline 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.

Woodside assumes that sourcing conventional capping stack deployment vessels would be per the Source Control Emergency Response Planning Guideline. 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 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.

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 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 anticipates 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 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 has an active heave compensated crane, rated to at least 150 T in shallower water and 250 T in deeper water, and at least 90 m in length and a deck capacity to hold at least 110 T of capping stack.

Timeframes for capping stack deployment detailed in **Figure 6-2** would be implemented concurrently with the actions required for the Safety Case revision development scenarios detailed in **Figure 6-3** and **Table 6-3**. To reduce uncertainty in regulatory approval timeframe, Woodside is collaborating with The Drilling Industry Steering Committee (DISC) and a contracted ISV Vessel Operator to develop a generic Safety Case Revision that contemplates a capping stack deployment. This Safety Case Revision will be used to reduce uncertainty in permissioning timeframes in the event a capping stack deployment is required. Woodside intends to 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 6.3.5.

6.2.4 Relief Well drilling

The options analysis detailed in this section considers options to source, contract and mobilise a MODU or MODUs 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 Scarborough is illustrated in **Figure 6-1**:

- Primary – review internal Woodside drilling programs and MODU availability to source appropriate rig(s) operating within Australia with an approved Safety Case.
- Alternate – source and contract a MODU through AEP MoU that is operating within Australia with an approved Safety Case.
- Contingency – Source and contract a MODU outside Australia with an approved Australian Safety Case.

For the worst-case discharge scenario modelled, an additional MODU, subsea well kill spools and hoses is required to provide pumping assistance to the primary relief well drilling rig. The MODU will be obtained per the above hierarchy.

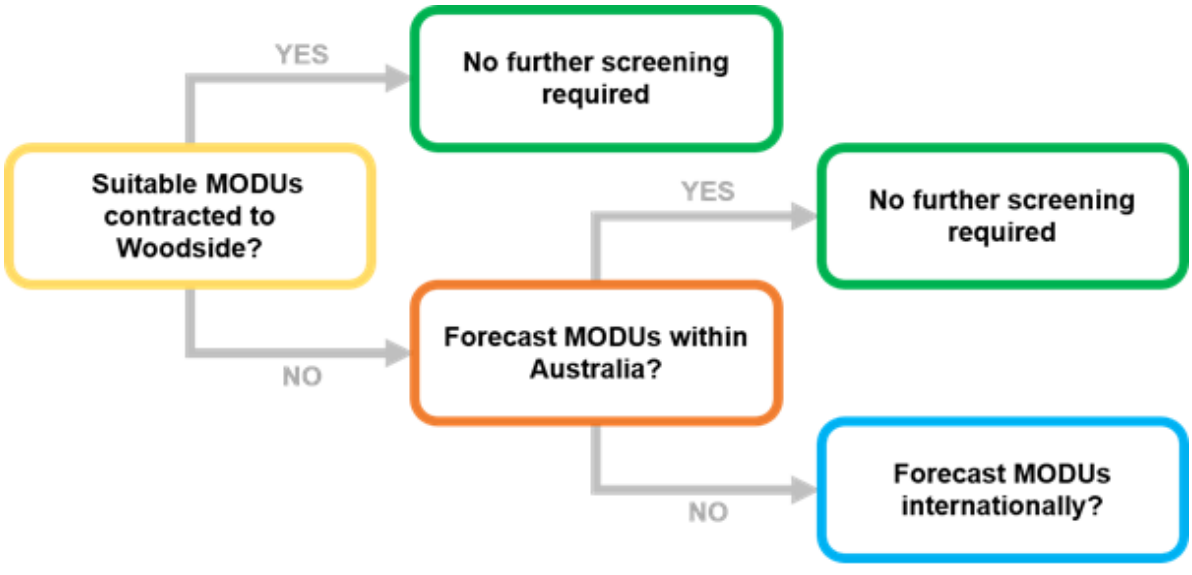

Figure 6-1: Process for sourcing relief well MODU

Screening of a relief well MODU from international waters is undertaken only if required, i.e. there is low confidence in local (Australian) availability. The screening of relief well MODUs is undertaken

and presented at a well design stage peer assessment. The capability, location and Australian Safety Case status is assessed for each Woodside contracted MODU. In the event the Woodside contracted MODUs are unsuitable, screening is extended to all MODUs operating in Australian Waters. The suitability and location of pre-identified relief well MODUs is tested again prior to the operation. Though the AEP MoU will serve as the instrument to facilitate the transfer of drilling units and well site services between operators in the event of an emergency, Woodside will engage each of the identified titleholders in advance to maintain confidence in MODU suitability and availability.

Based on the detail provided, the Primary and Alternate approaches are expected to be achieved within the estimated mobilisation period.

The internal and external availability of moored and DP MODUs, plus rig activities of registered operators and rigs with approved safety cases, are tracked by Woodside on a monthly basis, with a two-year look ahead, to ensure that the best available option can be sourced and utilised in the event of the worst-case credible scenario.

If the above forecast indicates a gap in availability of a suitable MODU for relief well drilling within Australia, screening would be extended to MODUs with a valid safety case outside Australia. If an international MODU with an Australian safety case is not identified, an internal review will be undertaken, NOPSEMA notified and the issue tabled at the AEP Drilling Industry Safety Committee. A review of the significance of the change in risk will be undertaken in accordance with Woodside's environment management of change requirements and relevant regulatory triggers. The aforementioned lookahead timeframe would allow two years' warning of any potential gap. Woodside will execute relief well drilling in the fastest possible timeframe.

The detail of these arrangements demonstrates that the risks have been reduced to ALARP and Acceptable levels through the control measures and performance standards outlined in Section 5.2.

6.2.4.1 Relief Well drilling timings

The duration of a blowout (from initiation to a successful kill) is assessed as 69 days. The Macedon operational wells are very similar in their lengths, depths and casings. The wells with the worst-case discharge rates were modelled for relief well planning.

Details on the steps and time required to drill a relief well is shown in **Table 6-2** below. Moored MODUs are suitable for a Macedon relief well.

To validate the effectiveness of the relief MODU supply arrangements through the AEP MoU, an exercise to test the mobilisation period forms part of Woodside's three-yearly Hydrocarbon Spill Arrangements Testing Schedule. Testing of these arrangements are facilitated by an external party and includes suspension of the assisting operator's activities, contracting the MODU, vessel safety case revision and transit to location.

Table 6-2: Relief well drilling timings

Estimated Relief Well Duration		Days (moored MODU)
1	Issue notifications, suspend operations and secure well on rig of opportunity. Prepare for transit.	7.0
2	*Preparation for regulatory documents for submission and assemble technical team*	*7.0 (concurrent with preceding step)*
3	Concurrent regulatory approval works	30.0
4	*Tow relief well rig to location (high case assumes MODU is outside of local region)*	*7.0 to 29.0 (concurrent with preceding steps)*
5	Drill relief well to intercept point (9-5/8" casing shoe)	17.0
6	Intercept the original well and perform well kill (assumes three failed intersection attempts, each followed by pull-back and side-track, with successful intersection on fourth attempt)	15.0
	TOTAL	**69**

Woodside has considered a broad range of alternate, additional, and improved options as outlined in Section 6.2.5.

Intersect and kill duration is estimated at 15.0 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.

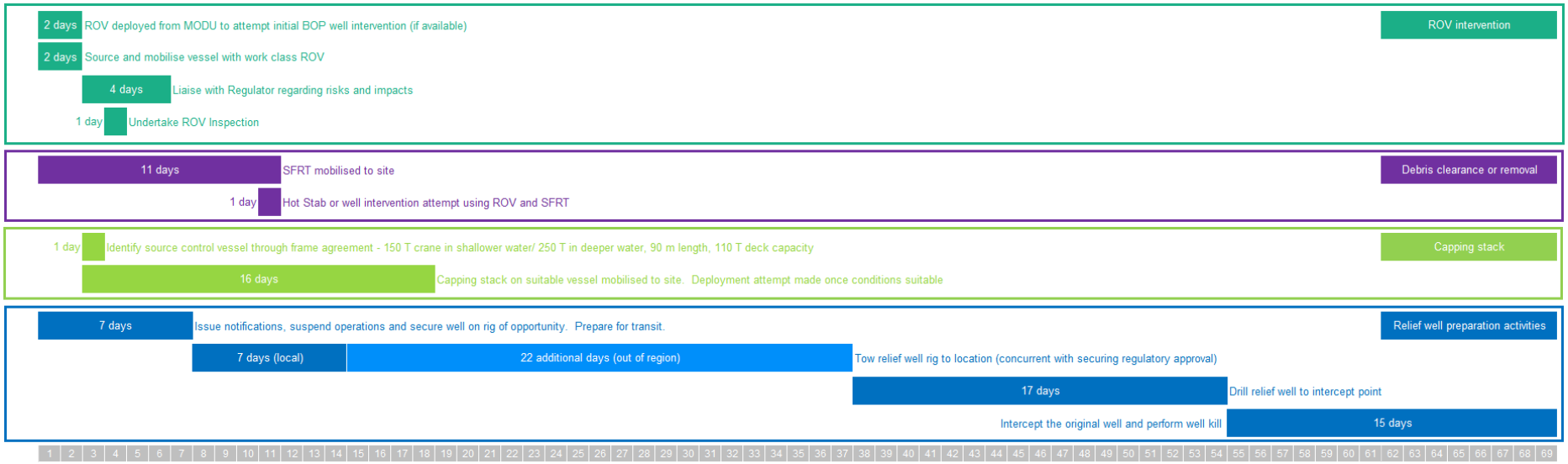

Figure 6-2: Source control and well intervention response strategy deployment timeframes for Macedon operational wells

6.2.4.2 Safety Case considerations

Woodside recognises that it will not be the Operator or holder of the Safety Case for the MODU and/or vessels involved in relief well activities. In the event that a revision to the Operator's Safety Case is required for relief well drilling, Woodside has identified measures to ensure timely response and optimise preparedness as far as practicable that can be undertaken to expedite a straightforward Safety Case revision for a MODU/ vessel to commence drilling a relief well. Performance standards associated with these measures have been included in Section 5.2.
These include;

- Access to Safety and Risk discipline personnel with specialist knowledge.
- Monitoring internal and external rigs and vessel availability in the region and extended area through contracted arrangements on a monthly basis, with a two-year lookahead.
- Prioritisation of rigs/vessels with current or historical contracting arrangements. Woodside maintains records of previous contracting arrangements and companies. All current contracts for vessels and rigs are required to support Woodside in the event of an emergency.
- Leverage mutual aid arrangements such as the AEP MoU for vessel and rig support.
- Woodside Planning and Logistics, and Safety Officers (on-Roster/Call 24/7) which can articulate need for, and deliver Woodside support, in key delivery tasks including sitting with potential outside operators.
- Ongoing strategic industry engagement and collaboration with NOPSEMA to work toward time reductions in regulatory approvals for emergency events.

Woodside has identified three safety case revision development and submission scenarios for a MODU and plotted these alongside the relief well preparation activities in Figure 6-3. The assumptions for each of the cases are detailed in subsequent Table 6-3.
The MODUs screened for contingency relief well drilling all operate under an Accepted base Safety Case. A relief well Safety Case Revision would leverage the previously accepted Safety Case Revision for the PAP, including the associated site-specific well hazards. As such, there is less new detail for the regulator to review and should present a short review timeframe with no impact expected to the commencement of relief well drilling activities.

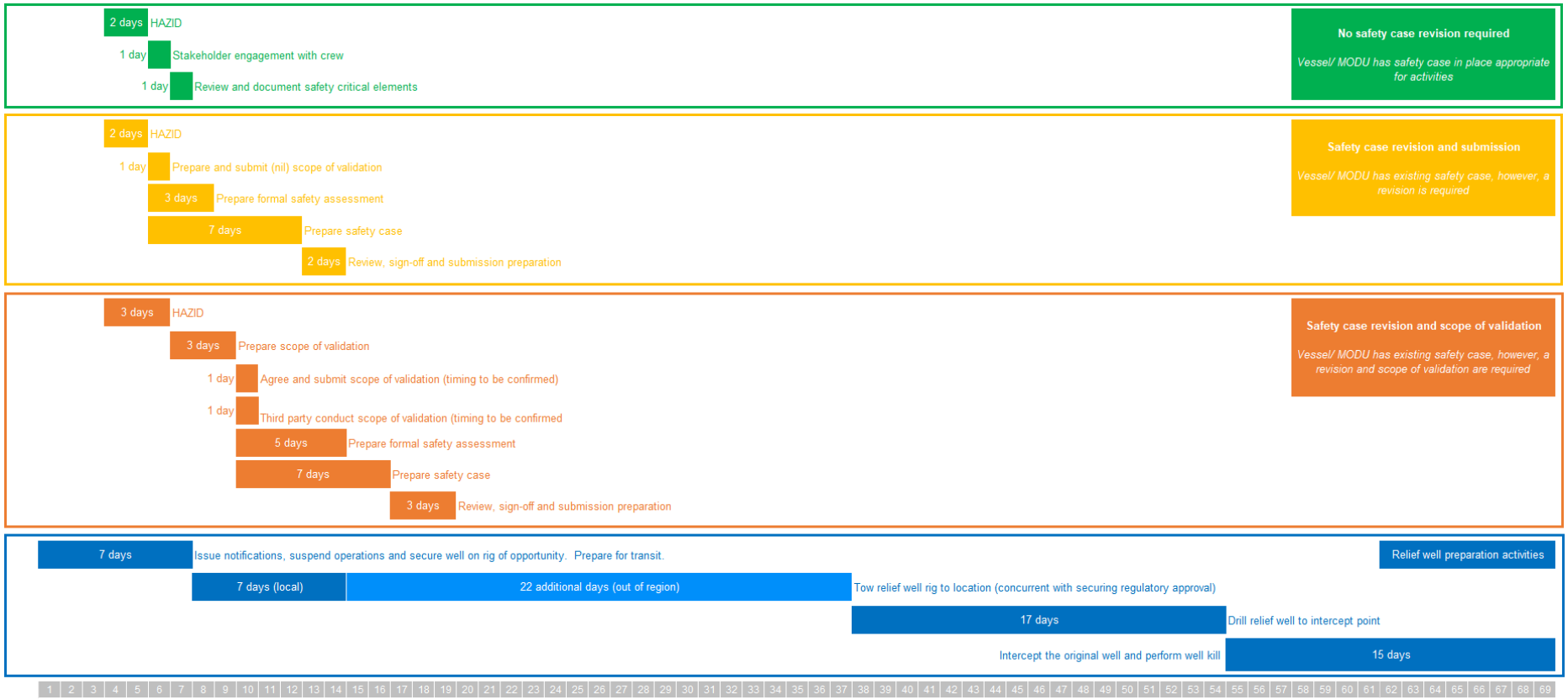

Figure 6-3: Timeline showing safety case revision timings alongside other relief well preparation activity timings for Macedon Operational Wells

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 subsea dispersant injection allows for working in a hydrocarbon environment and control measures are already in place in the existing safety case. For MODU, it assumes that the relief well equipment is already part of the MODU facility and MODU safety case.	• Validation will be required for new facilities only. The time needed for the validator to complete the review (from the last document received) and prepare validation statement is undetermined. This is not accounted for here as the safety case submission is not dependent on the validation statement, however the safety case acceptance is.
		• Assumes safety case preparation is undertaken 24/7.	• Assumes safety case preparation is undertaken 24/7.

6.2.5 Source Control – Control Measure Options Analysis

6.2.5.1 Alternative Control Measures

Alternative Control Measures Considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Feasibility**	**Environmental benefits/impacts**	**Approximate cost**	**Assessment conclusions**	**Implemented**
Standby MODU shared for all Woodside activities	A standby MODU shared across all Woodside activities is likely to provide a moderate environmental benefit as it may reduce the 21-day sourcing, contracting and mobilisation time by up to 10 days (to 11 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities.	This option is not considered feasible for all Woodside activities as there are a large range of well depths, complexities, geologies and geophysical properties across all Woodside's operations. The large geographic area of Woodside activities also means that the MODU is unlikely to be in the correct location at the right time when required.	Even with costs shared across Woodside operations, the costs (approximately A$219 m per annum, A$1.95 b over the five years) of maintaining a shared MODU are considered disproportionate to the environmental benefit potentially achieved by reducing mobilisation times by up to 10 days.	The costs and complexity of having a MODU and maintaining this arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained above finding a MODU through the MoU agreement for all spill scenarios.	No
Standby MODU shared across AEP MoU Titleholders	A standby MODU shared across all titleholders who are signatories to the AEP MoU is likely to provide a minor environmental benefit as it may reduce the 21-day sourcing, contracting and mobilisation time by up to seven days (to 14 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities.	This option is not considered feasible for a number of Titleholders due to the remote distances in Australia as well as a substantial range of well depths, types, complexities, geologies and geophysical properties across a range of Titleholders	As the environmental benefit is only considered minor and the reduction in timing would only be for the mobilisation period (reduction from 21 days to 14 days) the costs are considered disproportionate to the minor benefit gained.	The costs and complexity of having a MODU and maintaining a shared arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained above finding a MODU through the MoU agreement for all spill scenarios.	No

6.2.5.2 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 rigs from outside Australia with an existing Safety Case. This would require development and approval of a safety case revision for the rigs 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
Offset capping alternative to conventional capping stack deployment	While the use of an offset capping system could reduce the quantity of hydrocarbon entering the marine environment, the mobilisation lead times for both a cap and required vessels/ support equipment, would minimise any environmental benefit gained over conventional capping.	• The base case considerations for offset installation equipment (OIE) requires a coordinated response by 4 to 7 vessels working simultaneously outside of the 500m exclusion zone introducing complex SIMOPS issues. 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.	Due to risks, uncertainty and complexity of this option, and the inability to realise any environmental gains, any cost would be disproportionate to the benefits gained over conventional capping.	Woodside has confidence in availability of suitable relief well MODUs across the required drilling time frame thus the OIE would provide no advantage. Implementation of OIE has been assessed as a highly complex SIMOPs operation. Implementation of a novel technology such as OIE culminates in low certainty of success while at the same	No

		• 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 T 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.		time increasing associated health and safety risks. As such the primary source control response and ALARP position remain conventional capping and drilling a relief well.	
Dual vessel capping stack deployment	While the use of dual vessel to deploy the capping system could reduce the quantity of hydrocarbon entering the marine environment, this is an unproven technology. Additionally, the feasibility issues surrounding a dual vessel capping deployment together with mobilisation lead times for both a cap and required vessels and support equipment, would minimise any environmental benefit gained over conventional capping.	A dual vessel deployment is somewhat feasible provided a large enough deck barge can be located. Deck barges of 120 m are not, however, very common and will present a logistical challenge to identify and relocate to the region. Further, the longer-length barges may need mooring assist to remain centred over the well. The capping stack would be handed off from a crane vessel to the anchor handler vessel (AHV) work wire outside of the exclusion zone. The AHV would then manoeuvre the barge into the plume to get the capping stack over the well. In this method, the barge would be in the plume, but the AHV and all personnel would be able to maintain a safe position outside of the gas zone. The capping stack would actually be lowered on the AHV work wire so a crane would not be required on the barge.	Due to there being minimal environmental benefits gained by the prolonged lead times needed to execute this technique, plus a potential increase in safety issues, any cost would be disproportionate to the benefits gained over conventional capping.	Given there is minimal environmental benefit and an increase in safety issues surrounding SIMOPS and deployment in shallow waters, this option would not provide an environmental or safety benefit.	No
Subsea containment system alternative to capping stack deployment	While the use of a subsea containment system could reduce the quantity of hydrocarbon entering the marine environment, this is an unproven technology. Additionally, the system is unlikely to be feasibly deployed and activated for at least 90 days following a blowout due to equipment requirements and logistics. No environmental benefit is therefore predicted given the release duration is 69 days before drilling of a relief well under the adopted control measure.	The timing for mobilisation, deployment and activation of the subsea containment system is likely to be >90 days which is longer than the expected 69 days relief well drilling operations based on the location, size and scale of the equipment required, including seabed piles that can only be transported by vessel.	Woodside has investigated the logistics of reducing this timeframe by pre-positioning equipment but the costs of purchasing dedicated equipment by Woodside for this Petroleum Activities Program is not considered reasonably practical and are considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit due to the long mobilisation lead time.	No
Pre-drilling (relief well) top-holes	This option represents additional environmental impacts associated with discharge of additional drill cuttings and fluids along with benthic habitat disturbance. It is also not expected to result in a significant decrease in relief well timings	This option is not considered feasible due to the uncertainties related to the location and trajectory of the intervention well, which may vary according to the actual conditions at the time the loss of containment event occurs. Additionally, there is only expected to be a minor reduction in timing for this option of 1-2 days based on the drilling schedule. Duration to drill and kill may be reduced by 1-2 days, but top-hole may have to be relocated, due to location being unsafe or unsuitable and further works will	Utilising an existing MODU and pre-drilling top-hole for relief well commencement would significantly increase costs associated the Petroleum Activities Program. Estimated cost over the program's life is approx. A$555,000 per day over the PAP based on 2-4 days of top-hole drilling (plus standby time) for the well as the worst-case scenario.	This option would not provide an environmental benefit due to the additional environmental impacts coupled with a lack of improved relief well timings.	No

		be required each year to maintain the top holes.			
Purchase and maintain mooring system	Purchasing and maintaining a mooring system could provide a moderate environmental benefit as it may reduce equipment sourcing time. However, due to the continued need for specialists to install the equipment plus sourcing a suitable vessel, the timeframe reduction would be minimal.	Woodside is not a specialist in installing and maintaining moorings so would require specialists to come in to install the moorings and would also require specialist vessels to be sourced to undertake the work.	The cost of purchasing, storing and maintaining pre-lay mooring systems with anchors, chains, buoys and ancillary equipment is considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit as timeframe reductions would be minimal.	No
Contract in place with WWCI and Oceaneering	Woodside has an agreement in place with WWCI 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 mobilisation 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

6.2.5.3 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	**Feasibility**	**Environmental benefits/impacts**	**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 relief well drilling rigs within Woodside. The environmental benefit of monitoring other drilling programs internally is that Woodside would be in a position to understand which other rigs might be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	Woodside monitors vessel and MODU availability through market intelligence services for location. Woodside will continually monitor other drilling and exploration activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	Associated cost of implementation is minimal to the environmental benefit gained. Woodside has outlined control measures and performance standards.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes
Monitor external activity for rig availability	The environmental benefit achieved by monitoring drilling programs and rig movements across industry provides the potential for increased availability of suitable rigs for relief well drilling. Additional discussions with other Petroleum Titleholders may be undertaken to potentially gain faster access to a rig and reduce the time taken to kill the well and therefore volume of hydrocarbons released.	Woodside will source relief well drilling rigs in accordance with the AEP MoU on rig sharing in the unlikely event this is required. Commercial and operational provisions do not allow Woodside to discuss current and potential drilling programs in detail with other Petroleum Titleholders.	Associated cost of implementation is moderate to the environmental benefit gained. Woodside will continually engage with other Titleholders and Operators regarding activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes
Monitor status of Registered Operators / Approved Safety cases for rigs	Woodside can monitor the status of Registered Operators for rigs operating within Australia (and therefore safety case status) on a monthly basis. This allows for a prioritised selection of rigs in the event of a response with priority given to those with an existing safety case.	The environmental benefit of monitoring other drilling programs internally is that Woodside would be in a position to understand which other rigs might 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
Maintaining relief well drilling supplies	There is not predicted to be any reduction in relief well timing or spill duration from Woodside maintaining stocks of drilling supplies (mud, casing, cement, etc.)	It would be feasible to source some relief well drilling supplies such as casing but the actual composition of the cement and mud required will need to be specific to the well. This option is also not deemed necessary as the lead time for sourcing and mobilising	The capital cost of Woodside purchasing relevant drilling supplies is expected to be approximately A$600,000 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 as the specific required relief well drilling supplies could only be determined at the time of a spill event. Additionally, sourcing these supplies is already included in the relief well drilling timeframe.	No

		these supplies is included in the 21 days for sourcing and mobilising a rig.			

6.2.6 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - Implement and maintain minimum standards for Safety Case development
  - Contract in place with WWCI and Oceaneering to supply trained, competent personnel
- Improved
  - Monitor internal drilling programs for MODU availability
  - Monitor external activity for MODU availability
  - Monitor status of registered operators / approved safety cases for MODUs

6.3 Source Control via Vessel SOPEP – ALARP Assessment

Alternative, Additional and Improved options have been assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.3.1 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.3.1.1 Alternative Control Measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
No reasonably practical alternative control measures identified					

6.3.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
No reasonably practical additional control measures identified					

6.3.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
No reasonably practical improved control measures identified					

6.3.2 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.4 Shoreline Protection and Deflection – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.4.1 Existing Capability – Shoreline Protection and Deflection

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.4.2 Response Planning: Macedon Operations (Cwth) – Shoreline Protection and Deflection

Planning for shoreline protection is based upon identification of Response Protection Areas (RPAs) from deterministic modelling and the logistics associated with deploying protection at these locations. The response planning scenarios indicate that this would require effective mobilisation to priority shorelines and maintenance of protection until operational monitoring confirms that the locations were no longer at risk. Woodside has identified the RPAs from deterministic modelling results provided from specific scenarios.

The control measures selected provide capability to mobilise shoreline protection equipment by Day 2 (if required). Stochastic modelling scenarios indicate that no shorelines are predicted to be contacted at feasible response thresholds (> 100 g/m^2). First shoreline contact below response threshold is predicted at Exmouth Coastline, Ningaloo Coast World Heritage area, and Ningaloo Marine Park (State) on day 1.5 for the Macedon Operations (Cwth) scenario. Existing capability for these initial locations may be insufficient to mobilise and deploy protection at RPAs prior to hydrocarbon contact on day 1.5, but is sufficient by day 2. Protection priorities will be guided by the ongoing operational monitoring.

Tactical response plans exist for many of the RPAs identified. The plans identify values and sensitivities that would be protected at location. Modelling does not predict that all priority protection shorelines will be at risk of contact at the same time. Therefore, to allow for the best use of available shoreline protection and deflection resources, operational monitoring (OM01 and OM02) will inform the response, targeting RPAs where contact is predicted above response threshold levels.

Table 6-4 below outlines the capability required (number of RPAs predicted to be impacted) against the capability available (number of shoreline protection and deflection operations that can be mobilised and deployed). As can be seen from the table below. Woodside's capability exceeds the response planning need identified for shoreline protection and deflection operations at identified RPAs.

Table 6-4: Response Planning – Shoreline Protection and Deflection

Macedon Operations (Cwth) Vessel Collision Scenario		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Month 2	Month 3
	Number of RPAs (from stochastic modelling)	0	1	0	0	0	0	0	0	0	0	0	0
A	Capability Required												
A1	Personnel required – total operations (lower)	0	2	0	0	0	0	0	0	0	0	0	0
A2	Personnel required – total operations (upper)	0	6	0	0	0	0	0	0	0	0	0	0
B	Capability Available (operations per day)												
B1	Personnel available – total operations (lower)	0	2	2	4	4	8	12	140	140	168	616	6161
B2	Personnel available – total operations (upper)	6	12	18	24	36	48	60	420	420	640	1,848	1,848
C	Capability Gap (operations per day)												
C1	Personnel gap – per day (lower)	0	0	0	0	0	0	0	0	0	0	0	0
C2	Personnel gap – per day (upper)	0	0	0	0	0	0	0	0	0	0	0	0

A1 and A3 – the upper and lower number of shoreline protection and deflection response personnel required based on resources-at-risk
B1 and B2 – the upper and lower number of shoreline protection and deflection response personnel (based on response planning assumptions in Section 5.2),
C1 and C2 – the gap between the upper and lower number of shoreline protection and deflection personnel required in A1 and A2 compared to the operations available in B1 and B2

Table 6-5: Indicative Tactical response plan, aims and methods for identified RPAs

Tactical Response Plan	Response aims and methods
Muiron Islands	**First response aim:** Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident **Second response aim**: Pre-clean of potential impact areas (if time allows) using rakes and shovels to move any debris above the high tide line and then segregate appropriately **Third response aim**: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate **Fourth response aim**: Collection and specialist cleaning/rehabilitation of oiled wildlife
Ningaloo coast – Mangrove Bay	**First Response Aim: Protection of Mangrove Bay Lagoon.** Methods: Prevent oil ingress to lagoons through use of shore sealing booms. Complete northern lagoon first, then southern if required – depending on beach topography and tidal cycle. **Second Response Aim: Pre-clean of the beach area.** Methods: Using rakes and shovels move any debris on the beach to above the high tide area, above the reach of any floating oil. **Third Response Aim: Recovery of oil at lagoon entrance.** Methods: Use skimmer to recover floating oil. **Fourth Response Aim: Clean-up of oiled shoreline.** Methods: Manual clean-up techniques, predominantly rakes and shovels, with flushing and vacuum skimming if appropriate and required
Ningaloo coast – Turquoise Bay	**First Response Aim: Pre-clean of the beach area.** Method: Using rakes and shovels move any debris on the beach to above the high tide area, above the reach of any floating oil. **Second Response Aim: Clean-up of oiled shoreline.** Method: Manual clean-up techniques, predominantly rakes and shovels, with flushing and vacuum skimming if appropriate and required.
Ningaloo coast – Yardie Creek	**First Response Aim: Protection of Yardie Creek entrance.** Methods: Prevent oil ingress to lagoon through use of shore sealing boom.

	Second Response Aim: Pre-clean of the beach area. Methods: Using rakes and shovels move any debris on the beach to above the high tide area, above the reach of any floating oil. **Third Response Aim: Recovery of oil at Yardie Creek entrance.** Methods: Use skimmer to recover floating oil into temporary storage. **Fourth Response Aim: Cleanup of oiled shoreline.** Methods: Manual clean-up techniques, predominantly rakes and shovels, with flushing and vacuum skimming if appropriate and required.
Ningaloo coast – Jurabi to Lighthouse Beaches Exmouth	**First Response Aim:** Pre-clean of the beach area. Method: Using rakes and shovels move any debris on the beach to above the high tide area, above the reach of any floating oil. **Second Response Aim:** Clean-up of oiled shoreline. Method: Manual clean-up techniques, predominantly rakes and shovels, with flushing and vacuum skimming if appropriate and required.
Exmouth Gulf	**First Response Aim:** Undertake Monitor and Evaluate strategy – Shoreline assessment techniques to be undertaken. **Second Response Aim:** Pre-clean of the beach area using rakes and shovels, move any debris on the beach to above the high tide area, above the reach of any floating oil. **Third Response Aim:** Shoreline Protection - prevent oil from moving into key sensitive areas within the gulf area by deployment of booms. Deflection & containment methods would be undertaken. **Fourth Response Aim:** Recovery of collected oil where possible through the use of skimming systems. Although boom formations will deflect most of the spilt hydrocarbon away from sensitive areas, it may be necessary to collect and remove floating oil from additional boom formations to prevent the spread of oil down the coastline into the Gulf. **Fifth Response Aim:** Clean-up of oiled shoreline using manual clean up techniques, predominantly rakes and shovels, with flushing and vacuum skimming if appropriate and required. OPERATIONAL NEBA REQUIRED PRIOR TO DEPLOYMENT **Sixth Response Aim:** Collection and cleaning of oiled wildlife.
Pilbara Islands – Southern Island Group	**First Response objective:** Undertake Monitor and Evaluate strategy – Shoreline assessment techniques to be undertaken. **Second Response objective:** Pre-clean of the beach area using rakes and shovels, move any debris on the beach to above the high tide area, above the reach of any floating oil. **Third Response objective:** Shoreline Protection - prevent oil from moving into key sensitive areas within the gulf area by deployment of booms. Deflection & containment methods would be undertaken.

	Fourth Response objective: Recovery of collected oil where possible through the use of skimming systems. Although boom formations will deflect most of the spilt hydrocarbon away from sensitive areas, it may be necessary to collect and remove floating oil from additional boom formations to prevent the spread of oil down the coastline into the Gulf. **Fifth Response objective:** Clean-up of oiled shoreline using manual clean up techniques, predominantly rakes and shovels, with flushing and vacuum skimming if appropriate and required.

Pre-emptive mobilisation of equipment and personnel would commence as soon as practicable prior to oil contact. Additional resources would be mobilised depending on the scale of the event to increase the length or number of shorelines being protected.

A shoreline protection and deflection response would be launched and additional TRPs drafted only when operational monitoring (OM02 and OM03) and modelling (OM01) indicate that contact could occur at RPA(s) within 14 days. The outputs from the monitoring will inform the need for and/or direct any additional response techniques and, additionally, if/when the spill enters State Waters and control of the incident passes to WA DoT.

6.4.3 Shoreline Protection and Deflection – Control Measure Options Analysis

6.4.3.1 Alternative Control Measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Pre-position equipment at Response Protection Areas (RPAs)	Additional environmental benefit of having equipment prepositioned is considered minor. Equipment is currently available to protect RPAs and additional shorelines, within estimated minimum times until shoreline contact at RPAs, enabling mobilisation of the selected delivery options.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised. Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options. The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost to preposition protection/ deflection packages at each site of potential impact would be approx. A$6,100 per package per day.	This option is not adopted as the existing capability meets the need.	**No**

6.4.3.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Supplemented stockpiles of equipment in Exmouth to protect additional shorelines	Additional equipment would increase the number of receptor areas that could be protected from hydrocarbon contact. However, current availability of personnel and equipment is capable of protecting up to 30 km of shoreline, commensurate with the scale and progressive nature of shoreline impact. Additional stocks would be made available from international sources if long term up scaling were necessary. A reduction in environmental consequence from a ‘B’ rating (serious long-term impacts) is unlikely to be realised as a result of having more equipment available locally.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised. Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options. The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost for purchase supplemental protection and deflection equipment would be approx. A$455,000 per package.	This option is not adopted as the existing capability meets the need.	**No**

Additional trained personnel	The level of training and competency of the response personnel ensures the shoreline protection and deflection operation is delivered with minimum secondary impact to the environment. Training additional personnel does not provide an increased environmental benefit.	Additional personnel required to sustain an extended response can be sourced through the Woodside *People & Global Capability Surge Labour Requirement Plan*. Additional personnel sourced from contracted OSRO's (OSRL/AMOSC) to manage other responders. Response personnel are trained and exercised regularly in shoreline response techniques and methods. All personnel involved in a response will receive a full operational/safety brief prior to commencing operations.	Additional Specialist Personnel would cost A$2,000 per person per day.	This option is not adopted as the existing capability meets the need.	**No**

6.4.3.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster response/ mobilisation time	Given modelling does not predict shoreline impacts at the threshold, Woodside considers that opportunistic deployment of protection and deflection operations prior to impact is sufficient.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection response will be available for mobilisation within 24-48 hrs of activation. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days.	The cost of establishing a local stockpile of new mitigation equipment (including protection and deflection boom) closer to the expected hydrocarbon stranding areas is not commensurate with the need.	This option is not adopted as the existing capability meets the need.	**No**

6.4.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.5 Wildlife Response – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.5.1 Existing Capability – Wildlife Response

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.5.2 Wildlife Response - Control Measure Options Analysis

6.5.2.1 Alternative Control Measures

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Direct contracts with service providers	This option duplicates the capability accessed through AMOSC and OSRL and would compete for the same resources. Does not provide a significant increase in environmental benefit.	These delivery options provide increased effectiveness through more direct communication and control of specialists. However, no significant net benefit is anticipated.	Duplication of capability – already subscribed to through contracts with AMOSC and OSRL	This option is not adopted as the existing capability meets the need.	**No**

6.5.2.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional wildlife treatment systems	The selected delivery options provide access to call-off contracts with selected specialist providers. The agreements ensure that these resources can be mobilised to meet the required response objectives, commensurate with the progressive nature of environmental impact and the time available to monitor hydrocarbon plume trajectories. Provides response equipment and personnel by Day 3. The additional cost in having a dedicated oiled wildlife response (equipment and personnel) in place is disproportionate to environmental benefit. These selected delivery options provide capacity to carry out an oiled wildlife response if contact is predicted; and to scale up the response if required to treat widespread contamination. Current capability meets the needs required and there is no additional environmental benefit in adopting the improvements.	Although hydrocarbon contact above wildlife response threshold concentrations (>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. 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 operational monitoring. 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 wildlife response personnel cost A$2,000 per person per day	This option is not adopted as the existing capability meets the need.	**No**

	The potential environmental benefit of training additional personnel is expected to be low.	Additional equipment and facilities would be required to support ongoing response, depending on the scale of the event and the impact to wildlife and maybe sourced via existing contracts with OSROs. Materials for holding facilities, portable pools, enclosures and rehabilitation areas would be sourced as required.			

6.5.2.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster mobilisation time for wildlife response	Response time is limited by specialist personnel mobilisation time. Current timing is 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**

6.5.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.6 Waste Management – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.6.1 Existing Capability – Waste Management

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.6.2 Waste Management - Control Measure Options Analysis

6.6.2.1 Alternative Control Measures

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.6.2.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Increased waste storage capability	The procurement of waste storage equipment options on the day of the event will allow immediate response and storage of collected waste. The environmental benefit of immediate waste storage is to reduce ecological consequence by safely securing waste, allowing continuous response operations to occur.	Access to Woodside's waste contractor'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**

6.6.2.3 Improved Control Measures

Improved Control Measures considered
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster response time	The access to Woodside's waste contractor's storage options provides the resources to store and transport waste, permitting the wastes to be stockpiled and gradually processed within the regional waste handling facilities. Bulk transport to Woodside's waste contractor's licensed waste management facilities would be undertaken via controlled-waste-licensed vehicles and in accordance with Environmental Protection (Controlled Waste) Regulations 2004.	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**

	The environmental benefit from successful waste storage will reduce pressure on the treatment and disposal facilities reducing ecological consequences by safely securing waste. In addition, waste storage and transport will allow continuous response operations to occur. This delivery option would increase known available storage, eliminating the risk of additional resources not being available at the time of the event. However, the environmental benefit of Woodside procuring additional waste storage is considered minor as the risk of additional storage not being available at the time of the event is considered low and existing arrangements provide adequate storage to support the response.				

6.6.3 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.7 Scientific Monitoring – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.7.1 Existing Capability – Scientific Monitoring

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/ vessel/ aircraft/ vehicle location and duties, survey or classification society inspection requirements, overflight/ port/ quarantine permits and inspections, crew/ pilot duty and fatigue hours, refuelling/ re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.7.2 Scientific Monitoring – Control Measure Options Analysis

6.7.2.1 Alternative Control Measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Analytical laboratory facilities closer to the likely spill affected area	The environmental consideration of having access to suitable laboratory facilities in Karratha to carry out the hydrocarbon analysis would provide faster turnaround in reporting of results only by a matter of days (as per the time to transport samples to laboratories).	SM01 water quality monitoring requires water samples to be transported to NATA-rated laboratories in Perth or over to the East coast. Consider the benefit of laboratory access and transportation times to deliver water samples and complete lab analysis. There is a time lag from collection of water samples to being in receipt of results and confirming hydrocarbon contact to sensitive receptors).	Laboratory facilities and staff available at locations closer to the spill affected area can reduce reporting times only to a moderate degree (days) with associated high costs of maintaining capability do not improve the environmental benefit.	This control measure is not adopted as the costs and complexity are considered disproportionate to any environmental benefit that might be realised.	**No**
Dedicated contracted SMP vessel (exclusive to Woodside)	Would provide faster mobilisation time of scientific monitoring resources, however, the environmental benefit associated with faster mobilisation time would be minor compared to selected options.	Chartering and equipping additional vessels on standby for scientific monitoring has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when compared with the anticipated availability of vessels and resources within in the required timeframes. The selected delivery provides capability to meet the scientific monitoring objectives, including collection of pre-emptive data where baseline knowledge gaps are identified for receptor locations where spill predictions of time to contact are >10 days. The effectiveness of this alternative control (weather dependency, availability and survivability) is rated as very low	The cost and organisational complexity of employing a dedicated response vessel is considered disproportionate to the potential environmental benefit by adopting these delivery options.	This control measure is not adopted as the costs and complexity are considered disproportionate to any environmental benefit that might be realised.	**No**

6.7.2.2 Additional control measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Determine baseline data needs and provide implementation plan in the event of an unplanned	Address resourcing needs to collect post spill (pre-contact) baseline data as spill expands in the event of a MDO spill from the PAP activities.	As part of Woodside's Scientific Monitoring Program the following are considered and incorporated into the spill response approach and the SMP Standby Service contract. • Woodside rely on existing environmental baseline for receptors which have predicted hydrocarbon contact (above	No cost associated with baseline for SM01.	This control measure is adopted as the costs and complexity are not disproportionate to any environmental benefit that might be realised.	**Yes**

hydrocarbon release		environment threshold) <10 days and acquiring pre-emptive data in the event of a loss of well control from the PAP activities based on receptors predicted to have hydrocarbon contact >10 days. • Ensure there is appropriate baseline for key receptors for all geographic locations that are potentially impacted <10 days of spill event. • Address resourcing needs to collect pre-emptive baseline as spill expands in the event of a spill of MDO from the PAP activities. • For SM01 pre-emptive baseline is not required as marine water quality is assumed to be pristine.			

6.7.2.3 Improved Control Measures considered

Improved Control Measures considered *Improved, 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 improved control measures identified					

6.7.3 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - Determine baseline data needs and provide implementation plan in the event of an unplanned hydrocarbon release
- Improved
  - None selected

6.7.4 Operational Plan

Key actions from the Scientific Monitoring Program Operational Plan for implementing the response are outlined in **Table 6-6**.

Table 6-6: Scientific monitoring program operational plan actions

Responsibility	Action
Activation	
CIMT Planning (CIMT Planning – Environment Unit)	Mobilises SMP Lead/Manager and SMP Coordinator to the CIMT Planning function.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	Constantly assesses all outputs from OM01, OM02 and OM03 (**Annex B**) to determine receptor locations and receptors at risk. Confirm sensitive receptors likely to be exposed to hydrocarbons, timeframes to specific receptor locations and which SMPs are triggered. Review baseline data for receptors at risk.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	SMP co-ordinator stands up SMP Standby contractor. Stands up subject matter experts, if required.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP Standby contractor)	Establish if, and where, pre-contact baseline data acquisition is required. Determines practicable baseline acquisition program based on predicted timescales to contact and anticipated SMP mobilisation times. Determines scope for preliminary post-contact surveys during the Response Phase. Determines which SMP activities are required at each location based on the identified receptor sensitivities.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP Standby contractor)	If response phase data acquisition is required, stand up the contractor SMP teams for data acquisition and instruct them to standby awaiting further details for mobilisation from the CIMT.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP Standby contractor)	SMP standby contractor, to prepare the Field Implementation Plan. Prepare and obtain sign-off of the Response Phase SMP work plan and Field Implementation Plan. Update the IAP.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP Standby contractor)	Liaise with CIMT Logistics, and determine the status and availability of aircraft, vessels and road transportation available to transport survey personnel and equipment to point of departure. Engage with SMP standby contractor, SMP Manager and CIMT Logistics to establish mobilisation plan, secure logistics resources and establish ongoing logistical support operations, including:

Responsibility	Action
	• Vessels, vehicles and other logistics resources • Vessel fit-out specifications (as • Detailed in the Scientific Monitoring Program Operational Plan • Equipment storage and pick-up locations • Personnel pick-up/airport departure locations • Ports of departure • Land based operational centres and forward operations bases, Accommodation and food requirements.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP Standby contractor)	Confirm communications procedures between Woodside SMP team, SMP standby contractor, SMP Team Leads and Operations Point Coordinator.
Mobilisation	
CIMT Logistics	Engage vessels and vehicles and arrange fitting out as specified by the mobilisation Plan Confirm vessel departure windows and communicate with the standby contractor's SMP Manager. Agree SMP mobilisation timeline and induction procedures with the Division and Sector Command Point(s).
CIMT Logistics	Coordinate with SMP standby contractor to mobilise teams and equipment according to the logistics plan and Sector induction procedures.
SMP Survey Team Leads	SMP Survey Team Leader(s) coordinate on-ground/on-vessel mobilisations and support services with the Sector Command point(s).

6.7.5 ALARP and Acceptability Summary

ALARP and Acceptability Summary		
Scientific Monitoring		
ALARP Summary	X	All known reasonably practicable control measures have been adopted
	X	No additional, alternative and improved control measures would provide further benefit
		No reasonably practical additional, alternative, and/or improved control measure exists
	The resulting 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. All 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 SMP's main objectives can be met, with the addition of one alternative control measures to provide further benefit.	
Acceptability Summary	• The control measures selected for implementation manage the potential impacts and risks to ALARP. • In the event of a hydrocarbon spill for the PAP, the control measures selected, meet or exceed the requirements of Woodside Management System and industry best-practice. • 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 Scientific Monitoring activities in response to a hydrocarbon spill. • The level of impact and risk to the environment has been considered with regards to the principles of ESD; and risks and impacts from a range of identified scenarios were assessed in detail. The control measures described consider the conservation of biological and ecological diversity, through both the selection of control measures and the management of their performance. The control measures have been developed to account for credible case scenarios, and uncertainty has not been used as a reason for postponing control measures.	
On the basis from the impact assessment above and in Section 6 of the EP, Woodside considers the adopted controls discussed manage the impacts and risks associated with implementing scientific monitoring activities to a level that is ALARP and acceptable.		

7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage these further impacts and risks to ALARP and Acceptable levels. A simplified assessment process has been used to complete this task which covers the identification, analysis, evaluation and treatment of impacts and risks introduced by responding to the event.

7.1 Identification of impacts and risks from implementing response techniques

Each of the control measures can modify the impacts and risks identified in the EP. These impacts and risks have been previously assessed within the scope of the EP. Refer to the EP for details regarding how these risks are being managed. They are not discussed further in this document.

- Atmospheric emissions
- Routine and non-routine discharges
- Physical presence, proximity to other vessels (shipping and fisheries)
- Routine acoustic emissions vessels
- Lighting for night work/navigational safety
- Invasive marine species
- Collision with marine fauna
- Disturbance to Seabed

Additional impacts and risks associated with the control measures not included within the scope of the EP include:

- Vessel operations and anchoring
- Human presence
- Additional stress or injury caused to wildlife
- Secondary contamination from the management of waste

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil and Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/ Habitat	Species	Socio-Economic
Operational monitoring	✓		✓	✓		✓	
Source control			✓	✓			
Shoreline protection and deflection	✓	✓			✓	✓	✓
Oiled wildlife				✓	✓	✓	
Scientific monitoring	✓	✓	✓	✓			
Waste management	✓	✓	✓				✓

7.3 Evaluation of impacts and risks from implementing response techniques

Vessel operations and anchoring

During the implementation of response techniques, where water depths allow, it is possible that response vessels will be required to anchor (e.g. during shoreline surveys). The use of vessel anchoring will be minimal and likely to occur when the impacted shoreline is inaccessible via road. Anchoring in the nearshore environment of sensitive receptor locations will have the potential to impact coral reef, seagrass beds and other benthic communities in these areas. Recovery of benthic communities from anchor damage depends on the size of anchor and frequency of anchoring. Impacts would be highly localised (restricted to the footprint of the vessel anchor and chain) and temporary, with full recovery expected.

Human presence

Human presence for manual clean-up operations may lead to the compaction of sediments and damage to the existing environment especially in sensitive locations such as mangroves and turtle nesting beaches. However, any impacts are expected to be localised with full recovery expected.

Waste generation

Implementing the selected response techniques will result in the generation of the following waste streams that will require management and disposal:

- Liquids (recovered oil/water mixture), recovered from oiled wildlife response
- Semi-solids/solids (oily solids), collected during oiled wildlife response
- Debris (e.g. seaweed, sand, woods, plastics), collected during oiled wildlife response.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination similar to that described above, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

Additional stress or injury caused to wildlife

Additional stress or injury to wildlife could be caused through the following phases of a response:

- Capturing wildlife
- Transporting wildlife
- Stabilisation of wildlife
- Cleaning and rinsing of oiled wildlife
- Rehabilitation (e.g. diet, cage size, housing density)
- Release of treated wildlife

Inefficient capture techniques have the potential to cause undue stress, exhaustion or injury to wildlife, additionally pre-emptive capture could cause undue stress and impacts to wildlife when there are uncertainties in the forecast trajectory of the spill. During the transportation and stabilisation phases there is the potential for additional thermoregulation stress on captured wildlife. Additionally, during the cleaning process, it is important personnel undertaking the tasks are familiar with the relevant techniques to ensure that further injury and the removal of water proofing feathers are managed and mitigated. Finally, during the release phase it's important that wildlife is not released back into a contaminated environment.

7.4 Treatment of impacts and risks from implementing response techniques

In respect of the impacts and risks assessed the following treatment measures have been adopted. It must be recognised that this environmental assessment is seeking to identify how to maintain the level of impact and risks at levels that are ALARP and of an acceptable level rather than exploring further impact and risk reduction. It is for this reason that the treatment measures identified in this assessment will be captured in Operational Plans, Tactical Response Plans, and/or First Strike Plans.

Vessel operations and access in the nearshore environment

- If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified (PS 8.1, 15.2).
- Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines (PS 8.2, 15.2).

Human presence

- Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations (PS 8.3).

Waste generation

- All oiled wildlife response sites zoned and marked before operations commence to prevent secondary contamination and minimise the mixing of clean and oiled waste (PS 21.1)

Additional stress or injury caused to wildlife

- Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA, and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan (PS 19.1).

8 ALARP CONCLUSION

An analysis of alternative, additional and improved control measures has been undertaken to determine their reasonableness and practicability. The tables in Section 6 document the considerations made in this evaluation. Where the costs of an alternative, additional, or improved control measure have been determined to be clearly disproportionate to the environmental benefit gained from its adoption it has been rejected. Where this is not considered to be the case the control measure has been adopted.

The risks from a hydrocarbon spill have been reduced to ALARP because:

- Woodside has a significant hydrocarbon spill response capability to respond to the WCCS through the control measures identified.
- New and modified impacts and risks associated with implementing response techniques have been considered and will not increase the risks associated with the activity.
- A consideration of alternative, additional, and improved control measures identified any other control measures that delivered proportionate environmental benefit compared to the cost of adoption for this activity ensuring that:
    - All known, reasonably practicable control measures have been adopted.
    - No additional, reasonably practicable alternative and/or improved control measures would provide further environmental benefit.
    - No reasonably practical additional, alternative, and/or improved control measure exists.
- A structured process for considering alternative, additional, and improved control measures was completed for each control measure.
- The evaluation was undertaken based on the outputs of the WCCS so that the capability in place is sufficient for all other scenario from this activity.
- The likelihood of the WCCS spill has been ignored in evaluating what was reasonably practicable.

9 ACCEPTABILITY CONCLUSION

Following the ALARP evaluation process, Woodside deems the hydrocarbon spill risks and impacts have been reduced to an acceptable level by meeting all of the following criteria:

- Techniques are consistent with Woodside's processes and relevant internal requirements including policies, culture, processes, standards, structures and systems.
- Levels of risk/ impact are deemed acceptable by relevant persons/ organisations and 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])

Term	Description / Definition
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected area (WHA, Commonwealth or State marine reserve or park) containing one or more receptor type.
Receptor Sensitivities	This is a classification scheme to categorise receptor sensitivity to an oil spill. The Environmental Sensitivity Index (ESI) is a numerical classification of the relative sensitivity of a particular environment (particularly different shoreline types) to an oil spill. Refer to the Woodside Oil Pollution Emergency Arrangements (Australia) for more details.
Regulator	NOPSEMA are the Environment Regulator under the Environment Regulations.
Reliability	The probability that at any point in time a control measure will operate correctly for a further specified length of time.
Response technique	The key priorities and objectives to be achieved by the response plan Measures taken in response to an event to reduce or prevent adverse consequences.
Survivability	Whether or not a control measure is able to survive a potentially damaging event is relevant for all control measures that are required to function after an incident has occurred.
Threshold	Hydrocarbon threshold concentrations applied to the risk assessment to evaluate hydrocarbon spills. These are defined as: surface hydrocarbon concentration – ≥10 g/m^2, dissolved – ≥50 ppb and entrained hydrocarbon concentrations – ≥100 ppb.
Zone of Application	The zone in which Woodside may elect to apply dispersant. The zone is determined based on a range of considerations, such as hydrocarbon characteristics, weathering and metocean conditions. The zone is a key consideration in the Net Environmental Benefit Analysis for dispersant use.

11.2 Abbreviations

Abbreviation	Meaning
ADIOS	Automated Data Inquiry for Oil Spills
AIIMS	Australasian Inter-Service Incident Management System
ALARP	As low as reasonably practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
AUV	Autonomous Underwater Vehicle
BAOAC	Bonn Agreement Oil Appearance Code
BOP	Blowout Preventer
cST	Centistokes
CIMT	Corporate Incident Management Team
DM	Duty Manager
DoT	Western Australia Department of Transport
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions (former Western Australian Department of Parks and Wildlife)
EMBA	Environment that May Be Affected
EMSA	European Maritime Safety Agency
EP	Environment Plan
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
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
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environment Conservation Association
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature
KBSF	King Bay Supply Facility
KIMC	Karratha Incident Management Centre
KSAT	Kongsberg Satellite
MODU	Mobile Offshore Drilling Unit

Abbreviation	Meaning
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
OPEA	Oil Pollution Emergency Arrangements
OPEP	Oil Pollution Emergency Plan
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
OWRP	Oiled Wildlife Response Plan
PAP	Petroleum Activities Program
PEARLS	People, Environment, Asset, Reputation, Livelihood and Services
PBA	Pre-emptive Baseline Areas
PPA	Priority Protection Area
PPB	Parts per billion
PPM	Parts per million
ROV	Remotely Operated Vehicle(s)
RPA	Response Protection Area
SCAT	Shoreline Contamination Assessment Techniques
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
WHA	World Heritage Area
Woodside	Woodside Energy Limited
WCC	Woodside Communication Centre
WWCI	Wild Well Control Inc
WCCS	Worst Case Credible Scenario
ZoA	Zone of Application

ANNEX A: NET ENVIRONMENTAL BENEFIT ANALYSIS DETAILED OUTCOMES

A NEBA has been conducted to assess the net environmental benefit of different response techniques to selected receptors in the event of an oil spill from the PAP for vessel collision (MDO). 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 the identified RPAs of the PAP identified from modelling (see Section 3 for outline of selection). These include receptors which have potential for the following:

- Surface contact (>50 g/m^2)
- Shoreline accumulation (>100 g/m^2) at any time
- Entrained contact (>100 ppb) within 14 days

The detailed NEBA assessment outcomes are shown below. The Macedon Operations (Cwth) preoperational NEBAs contains the full assessments.

Table A-1: NEBA assessment technique recommendations for MDO release following a vessel collision

Receptor	Operational Monitoring	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)
Exmouth Coastline	Yes	No	N/A	No	Potentially	No	No	No	Yes	No	No	Yes
Muiron Islands	Yes	No	N/A	No	Potentially	No	No	No	Yes	No	No	Yes
Ningaloo Coast World Heritage Area	Yes	No	N/A	No	Potentially	No	No	No	Yes	No	No	Yes
Ningaloo Marine Park (State)	Yes	No	N/A	No	Potentially	No	No	No	Yes	No	No	Yes
Muiron Islands Marine Management Area	Yes	No	N/A	No	Potentially	No	No	No	Yes	No	No	Yes
Gascoyne Australian Marine Park	Yes	No	N/A	No	N/A	No	No	No	Yes	No	No	Yes
Ningaloo Australian Marine Park	Yes	No	N/A	No	N/A	No	No	No	Yes	No	No	Yes

Overall assessment

Sensitive receptor (sites identified in EP)	Operational Monitoring	Containment and recovery	Dispersant application: sub-sea	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Source control (vessel)
Is this response Practicable?	Yes	No	N/A	No	Potentially	No	No	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	N/A	No	Yes	No	No	No	Yes	No	No	Yes

NEBA Impact Ranking Classification Guidance

To reduce variability between assessments, the following ranking descriptions have been devised to guide the workshop process:

			Degree of impact[4]	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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[4] NOTE: the maximum likely impact should be considered; for example, if a spill were to directly impact the behaviour that results in an impact to reproduction and/or the breeding population (such as fish failing to aggregate to spawn), then the score should be a 2 or 3 rather than a 1. Similarly, if a change in behaviour resulted in an increased risk of mortality of a population, then it should be scored as a 2 or 3

ANNEX B: OPERATIONAL MONITORING ACTIVATION AND TERMINATION CRITERIA

Table B-1: Operational monitoring objectives, triggers and termination criteria

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan – 01 (OM01) Predictive Modelling of Hydrocarbons to Assess Resources at Risk	OM01 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. OM01 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 OM01 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	OM01 will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of OM01 are: • The hydrocarbon discharge has ceased and no further surface oil is visible • Response activities have ceased • Hydrocarbon spill modelling (as verified by OM02 surveillance observations) predicts no additional natural resources will be impacted

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan – 02 (OM02) Surveillance and reconnaissance to detect hydrocarbons and resources at risk	OM02 aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill. The objectives of OM02 are: • Verify spill modelling results and recalibrate spill trajectory models (OM01). • 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.	OM02 will be triggered immediately following a level 2/3 hydrocarbon spill.	The termination triggers for the OM02 are: • 72 hours has elapsed since the last confirmed observation of surface hydrocarbons. • Latest hydrocarbon spill modelling results (OM01) do not predict surface exposures at visible levels.
Operational Monitoring Operational Plan – 03 (OM03) Monitoring of hydrocarbon presence, properties, behaviour and weathering in water	OM03 will measure surface, entrained and dissolved hydrocarbons in the water column to inform decision-making for spill response activities. The specific objectives of OM03 are as follows: • Detect and monitor for the presence, quantity, properties, behaviour and weathering of surface, entrained and dissolved hydrocarbons. • Verify predictions made by OM01 and observations made by OM02 about the presence and extent of hydrocarbon contamination. Data collected in OM03 will also be used for the purpose of longer-term water quality monitoring during SM01.	OM03 will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of OM03 are as follows: • The hydrocarbon release has ceased. • Response activities have ceased. • Concentrations of hydrocarbons in the water are below available ANZECC/ ARMCANZ (2018) trigger values for 99% species protection.

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan – 04 (OM04) Pre-emptive assessment of sensitive receptors at risk	OM04 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 OM04 is to confirm understanding of the status and characteristics of environmental resources predicted by OM01 and OM02 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 OM04 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. OM04 would be undertaken in liaison with WA DoT as the control agency once the oil is in State Waters (if a Level 2/3 incident).	Triggers for commencing OM04 include: • Contact of a sensitive habitat or shoreline is predicted by OM01, OM02 and/or OM03. • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed under OM05).	The criteria for the termination of OM04 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).

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational monitoring operational plan – 05 (OM05) Monitoring of contaminated resources	OM05 aims to implement surveys to assess the condition of wildlife and habitats contacted by hydrocarbons at sensitive habitat and shoreline locations. The primary objectives of OM05 are: • Record evidence of oiled wildlife (mortalities, sub-lethal impacts, number, extent, location) and habitats (mortalities, sub-lethal impacts, type, extent of cover, area, hydrocarbon character, thickness, mass and content) throughout the response and clean-up at locations contacted by hydrocarbons to inform and prioritise clean-up efforts and resources, while minimising the potential impacts of these activities. Indirectly, the information collected by OM05 may also support the assessment of environmental impacts, as determined through subsequent SMPs. OM05 would be undertaken in liaison with WA DoT as the control agency once the oil is in State Waters (if a Level 2/3 incident).	OM05 will be triggered when a sensitive habitat or shoreline is predicted to be contacted by hydrocarbons by OM01, OM02 and/or OM03.	The criteria for the termination of OM05 at any given location are: • No additional response or clean-up of wildlife or habitats is predicted. • Spill response and clean-up activities have ceased. OM05 survey sites established at sensitive habitat and shoreline locations will continue to be monitored during SM02. The formal transition from OM05 to SM02 will begin on cessation of spill response and clean-up activities.

ANNEX C: OIL SPILL SCIENTIFIC MONITORING PROGRAM

Oil Spill Environmental Monitoring

The following provides some further detail on Woodside's oil spill scientific monitoring Program and includes the following:

- The organisation, roles and responsibilities of the Woodside oil spill scientific monitoring team and external resourcing.
- A summary table of the ten scientific monitoring programs as per the specific focus receptor, objectives, activation triggers and termination criteria.
- Details on the oil spill environmental monitoring activation and termination decision-making processes.
- Baseline knowledge and environmental studies knowledge access via geo-spatial metadata databases.
- An outline of the reporting requirements for oil spill scientific monitoring programs.

Oil Spill Scientific Monitoring – Delivery Team Roles and Responsibilities

Woodside Oil Spill Scientific Monitoring Delivery Team

The Woodside science team are responsible for the delivery of the oil spill scientific monitoring. The roles and responsibilities of the Woodside scientific monitoring delivery team are presented in Table C-1 and the organisational structure and Corporate Incident Management Team (CIMT) linkage provided in Figure C-1.

Woodside Oil Spill Scientific monitoring program – External Resourcing

In the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors, scientific monitoring personnel and scientific equipment to implement the appropriate SMPs will be provided by SMP Standby contractor who hold a standby contract for SMP via the Woodside Environmental Services Panel (ESP). In the event that additional resources are required other consultancy capacity within the Woodside ESP will be utilised (as needed and may extend to specialist contractors such as research agencies engaged in long-term marine monitoring programs). In consultation with the SMP Standby Contractor and/or specialist contractors, the selection, field sampling and approach of the SMPs will be determined by the nature and scale of the spill.

Table C-1: Woodside and Environmental Service Provider – Oil Spill Scientific Monitoring Program Delivery Team Key Roles and Responsibilities

Role	Location	Responsibility
Woodside Roles		
SMP Lead/ Manager	Onshore	• Approves activated the SMPs based on operational monitoring data provided by the Planning Function • Provides advice to the CIMT in relation to scientific monitoring • Provides technical advice regarding the implementation of scientific monitoring • Approves detailed sampling plans prepared for SMPs • Directs liaison between statutory authorities, advisors and government agencies in relation to SMPs.
SMP Co-Ordinator	Onshore	• Activates the SMPs based on operational monitoring data provided by the Planning Function • Sits in the Planning function of the CIMT. • Liaises with other CIMT functions to deliver required logistics, resources and operational support from Woodside to support the Environmental Service Provider in delivering on the SMPs. Acts as the conduit for advice from the SMP Lead/Manager to the Environmental Service Provider • Manages the Environmental Service Provider's implementation of the SMPs • Liaises with the Environmental Service Provider on delivery of the SMPs • Arranges all contractual matters, on behalf of Woodside, associated with the Environmental Service Provider's delivery of the SMPs.
Environmental Service Provider Roles		
SMP Standby Contractor – SMP Duty Manager/ Project Manager (SMP Liaison Officer)	Onshore	• Coordinates the delivery of the SMPs • Provides costings, schedule and progress updates for delivery of SMPs • Determines the structure of the Environmental Service Provider's team to necessitate delivery of the SMPs • Verifies that HSE Plans, detailed sampling plans and other relevant deliverables are developed and implemented for delivery of the SMPs • Directs field teams to deliver SMPs • Arranges all contractual matters, on behalf of Environmental Service Provider, associated with the delivery of the SMPs to Woodside • Manages sub-consultant delivery to Woodside • Provides required personnel and equipment to deliver the SMPs.
SMP Field Teams	Offshore – Monitoring Locations	• Delivers the SMPs in the field consistent with the detailed sampling plans and HSE requirements, within time and budget. • Early communication of time, budget, HSE risks associated with delivery of the SMPs to the Environmental Service Provider – Project Manager • Provides start up, progress and termination updates to the Environmental Service Provider – Project Manager (will be led in-field by a party chief).

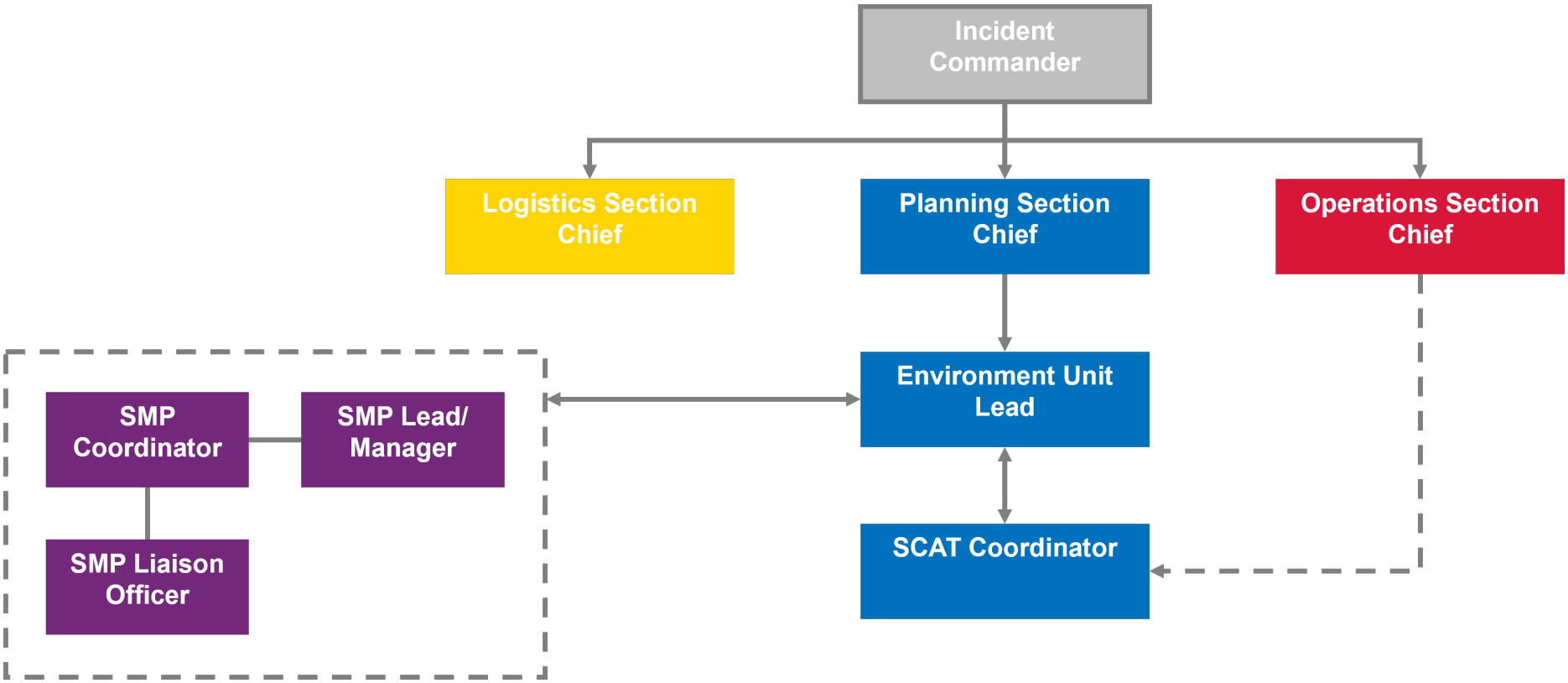

Figure C-1: Woodside Oil Spill Scientific Monitoring Program Delivery Team and Linkage to Corporate Incident Management Team (CIMT) organisational structure

Table C-2: Oil Spill Environmental Monitoring: Scientific Monitoring Program - Objectives, Activation Triggers and Termination Criteria

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
Scientific monitoring program 1 (SM01) **Assessment of Hydrocarbons in Marine Waters**	SM01 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine waters following the spill and the response. The specific objectives of SM01 are as follows: • Assess and document the extent, severity and persistence of hydrocarbon contamination with reference to observations made during surveillance activities and / or in-water measurements made during operational monitoring; and • Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.	SM01 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors	SM01 will be terminated when: • Operational monitoring data relating to observations and / or measurements of hydrocarbons on and in water have been compiled, analysed and reported; and • The report provides details of the extent, severity and persistence of hydrocarbons which can be used for analysis of impacts recorded for sensitive receptors monitored under other SMPs. SMP monitoring of sensitive receptor sites: • Concentrations of hydrocarbons in water samples are below NOPSEMA guidance note (20195) concentrations of 1 g/m2 for floating, 10 ppb for entrained and dissolved; and • Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in water have been documented at sensitive receptor sites monitored under other SMPs.
Scientific monitoring program 2 (SM02) **Assessment of the Presence, Quantity and Character of Hydrocarbons in Marine Sediments**	SM02 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine sediments following the spill and the response. The specific objectives of SM02 are as follows: • Determine the extent, severity and persistence of hydrocarbons in marine sediments across selected sites where hydrocarbons were observed or recorded during operational monitoring; and • Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.	SM02 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • Response activities have ceased; and • Operational monitoring results made during the response phase indicate that shoreline, intertidal or sub-tidal sediments have been exposed to surface, entrained or dissolved hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation).	SM02 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Concentrations of hydrocarbons in sediment samples are below ANZECC/ ARMCANZ (20136) sediment quality guideline values (SQGVs) for biological disturbance; and • Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in sediments have been documented.
Scientific monitoring program 3 (SM03) **Assessment of Impacts and Recovery of Subtidal and Intertidal Benthos**	The objectives of SM03 are: • Characterize the status of intertidal and subtidal benthic habitats and quantify any impacts to functional groups, abundance and density that may be a result of the spill; and • Determine the impact of the hydrocarbon spill and subsequent recovery (including impacts associated with the implementation of response options). Categories of intertidal and subtidal habitats that may be monitored include: • Coral reefs • Seagrass • Macro-algae • Filter-feeders	SM03 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of PBAs of receptor locations identified by time to hydrocarbon contact >10 days, to target receptors and sites where it is possible to acquire pre-hydrocarbon contact baseline; and • Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) for subtidal and intertidal benthic habitat.	SM03 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Overall impacts to benthic habitats from hydrocarbon exposure have been quantified. • Recovery of impacted benthic habitats has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.

[5] NOPSEMA (2019) Bulletin #1 – Oil spill modelling – April 2019, https://www.nopsema.gov.au/assets/Bulletins/A652993.pdf
[6] Simpson SL, Batley GB and Chariton AA (2013). Revision of the ANZECC/ARMCANZ Sediment Quality Guidelines. CSIRO and Water Science Report 08/07. Land and Water, pp. 132.

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
	SM03 will be supported by sediment contamination records (SM02) and characteristics of the spill derived from OMPs.		
Scientific monitoring program 4 (SM04) **Assessment of Impacts and Recovery of Mangroves / Saltmarsh**	The objectives of SM04 are: • Characterize the status of mangroves (and associated salt marsh habitat) at shorelines exposed/contacted by spilled hydrocarbons; • Quantify any impacts to species (abundance and density) and mangrove/saltmarsh community structure; and • Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options). SM03 will be supported by sediment sampling undertaken in SM02 and characteristics of the spill derived from OMPs.	SM04 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; and • Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) for mangrove/saltmarsh habitat.	SM04 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Impacts to mangrove and saltmarsh habitat from hydrocarbon exposure have been quantified. • Recovery of impacted mangrove/saltmarsh habitat has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 5 (SM05) **Assessment of Impacts and Recovery of Seabird and Shorebird Populations**	The Objectives of SM05 are to: • Collate and quantify impacts to avian wildlife from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population level; and • Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to seabirds and shorebird populations at targeted breeding colonies / staging sites / important coastal wetlands where hydrocarbon contact was recorded.	SM05 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Operational monitoring predicts shoreline contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at important bird colonies / staging sites / important coastal wetland locations; or • Records of dead, oiled or injured bird species made during the hydrocarbon spill or response.	SM05 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to seabird and shorebird populations from hydrocarbon exposure have been quantified. • Recovery of impacted seabird and shorebird populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 6 (SM06) **Assessment of Impacts and Recovery of Nesting Marine Turtle Populations**	The objectives of SM06 are to: • To quantify impacts of hydrocarbon exposure or contact on marine turtle nesting populations (including impacts associated with the implementation of response options); • Collate and quantify impacts to adult and hatchling marine turtles from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels (including impacts associated with the implementation of response options); .and • Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to nesting marine turtle populations at known rookeries (including impacts associated with the implementation of response options).	SM06 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring has: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Predicted shoreline contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at known marine turtle rookery locations; or • Records of dead, oiled or injured marine turtle species made during the hydrocarbon spill or response.	SM06 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to nesting marine turtle populations from hydrocarbon exposure have been quantified. • Recovery of impacted nesting marine turtle populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 7 (SM07)	The objectives of SM07 are to:	SM07 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental	SM07 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
Assessment of Impacts to Pinniped Colonies including Haul-out Site Populations	• Quantify impacts on pinniped colonies and haul-out sites as a result of hydrocarbon exposure/contact. • Collate and quantify impacts to pinniped populations from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels.	receptors and implemented if operational monitoring has: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Identified shoreline contact of hydrocarbons ((at or above 0.5 g/m² surface, ≥5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at known pinniped colony or haul-out site(s) (i.e. most northern site is the Houtman Abrolhos Islands); or • Records of dead, oiled or injured pinniped species made during the hydrocarbon spill or response.	SMP termination criteria process will be followed and include consideration of: • Impacts to pinniped populations from hydrocarbon exposure have been quantified. • Recovery of pinniped populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 8 (SM08) **Desk-Based Assessment of Impacts to Other Non-Avian Marine Megafauna**	The objective of SM08 is to provide a desk-based assessment which collates the results of OM02 and OM05 where observations relate to the mortality, stranding or oiling of mobile marine megafauna species not addressed in SM06 or SM07, including: • Cetaceans; • Dugongs; • Whale sharks and other shark and ray populations; • Sea snakes; and • Crocodiles. The desk-based assessment will include population analysis to infer potential impacts to marine megafauna species populations.	SM08 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring reports records of dead, oiled or injured non-avian marine megafauna during the spill/ response phase.	SM08 will be terminated when the results of the post-spill monitoring have quantified impacts to non-avian megafauna. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 9 (SM09) **Assessment of Impacts and Recovery of Marine Fish associated with SM03 habitats**	The objectives of SM09 are: • Characterise the status of resident fish populations associated with habitats monitored in SM03 exposed/contacted by spilled hydrocarbons; • Quantify any impacts to species (abundance, richness and density) and resident fish population structure (representative functional trophic groups); and • Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options).	SM09 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented with SMO3.	SM09 will be undertaken and terminated concurrent with monitoring undertaken for SM03, as per the SMP termination criteria process • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 10 (SM10) **SM10 - Assessment of physiological impacts important fish and shellfish species (fish health and seafood quality/safety) and recovery**	SM10 aims to assess any physiological impacts to important commercial fish and shellfish species (assessment of fish health) and if applicable, seafood quality/safety. Monitoring will be designed to sample key commercial fish and shellfish species and analyse tissues to identify fish health indicators and biomarkers, for example: • Liver Detoxification Enzymes (ethoxyresorufin-O-deethylase (EROD) activity) • PAH Biliary Metabolites • Oxidative DNA Damage • Serum SDH • Other physiological parameters, such as condition factor (CF), liver somatic index (LSI), gonado-somatic index (GSI) and gonad histology, total weight, length, condition, parasites, egg development, testes development, abnormalities.	SM10 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring (OM01, OM02 and OM05) indicates the following: • The hydrocarbon spill will or has intersected with active commercial fisheries or aquaculture activities. • Commercially targeted finfish and/or shellfish mortality has been observed/recorded. • Commercial fishing or aquaculture areas have been exposed to hydrocarbons (≥0.5 g/m² surface and ≥5 ppb for entrained/dissolved hydrocarbons); and	SM10 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Physiological impacts to important commercial fish and shellfish species from hydrocarbon exposure have been quantified. • Recovery of important commercial fish and shellfish species from hydrocarbon exposure has been evaluated. • Impacts to seafood quality/safety (if applicable) have been assessed and information provided to the relevant persons/ organisations and regulators for the management of any impacted fisheries.

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
	• Seafood tainting may be included (where appropriate) using applicable sensory tests to objectively assess targeted finfish and shellfish species for hydrocarbon contamination. Results will be used to make inferences on the health of commercial fisheries and the potential magnitude of impacts to fishing industries.	• Taste, odour or appearance of seafood presenting a potential human health risk is observed.	• Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.

Activation Triggers and Termination Criteria

Scientific monitoring program Activation

The Woodside oil spill scientific monitoring team will be stood up immediately with the occurrence of a hydrocarbon spill (actual or suspected) Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors via the first strike plan for the petroleum activity programme. The presence of any level of hydrocarbons in the marine environment triggers the activation of the oil spill scientific monitoring program (SMP). This is to ensure the full range of eventualities relating to the environmental, socio-economic and health consequences of the spill are considered in the planning and execution of the SMP. The activation process also takes into consideration the management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), CMRs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act) potentially exposed to hydrocarbons. With the first 24-48 hours of a spill event, such information will be sourced and evaluated as part of the SMP planning process guided by Appendix D (identified receptors vulnerable to hydrocarbon contact), the information presented in the Existing Environment section of the EP as well as other information sources such as the Woodside Baseline Environmental Studies Database.

The starting point for decision-making on what SMPs are activated and spatial extent of monitoring activities will be based on the predictive modelling results (OM01) in the first 24-48 hours until more information is made available from other operational monitoring activities such as aerial surveillance and shoreline surveys. Pre-emptive Baseline Areas (WHA, CMRs and State Marine Parks encompassing key ecological and socio-economic values) are a key focus of the SMP activation decision-making process, particularly, in the early spill event/response phase. As the operational monitoring progresses and further situational awareness information becomes available, it will be possible to understand the nature and scale of the spill. The SMP activation and implementation decision-making will be revisited on a daily basis to account for the updates on spill information. One of the priority focus areas in the early phase of the incident will be to identify and execute pre-emptive SMP assessments at key receptor locations, as required. The SMP activation and implementation decision tree is presented in Figure C-2.

Scientific monitoring Program Termination

The basis of the termination process for the active SMPs (SMPs 1-10) will include quantification of impacts, evaluation of recovery for the receptor at risk and consultation with relevant authorities, persons and organisations. Termination of each SMP will not be considered until the results (as presented in annual SMP reports for the duration of each program) indicate that the target receptor has returned to pre-spill condition.

Once the SMP results indicate impacted receptor(s) have returned to pre-spill condition (as identified by Woodside) a termination decision-making process will be triggered and a number of steps will be undertaken as follows:

- Woodside will engage expert opinion on whether the receptor has returned to pre-spill condition (based on monitoring data). Subject Matter Expert (SMEs) will be engaged (via the Woodside SME scientific monitoring terms of reference to review program outcomes, provide expert advice and recommendations for the duration of each SMP.
- Where expert opinion agrees that the receptor has returned to pre-spill condition, findings will then be presented to the relevant authorities, persons and organisations (as defined by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulation 11A). Identification of relevant persons/ organisations, planning and engagement will be managed by Woodside's Public Information Functional Support Team (FST) and follow the Stakeholder Management FST. These guidelines outline the FST roles and responsibilities, competencies, communications and planning processes. An assessment of the merits of any objection to termination will be documented in the SMP final report.

- Woodside will decide on termination of SMP based on expert opinion and merits of any relevant persons/ organisations' objections. The final report following termination will include: monitoring results, expert opinion and consultation including merits of any objections.
- Termination of SMPs will also consider applicable management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), CMRs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act).

The SMP termination decision-making process will be applied to each active SMP and an iterative process of decision steps continued until each SMP has been terminated (refer to decision-tree diagram for SMP termination criteria, Figure C-3).

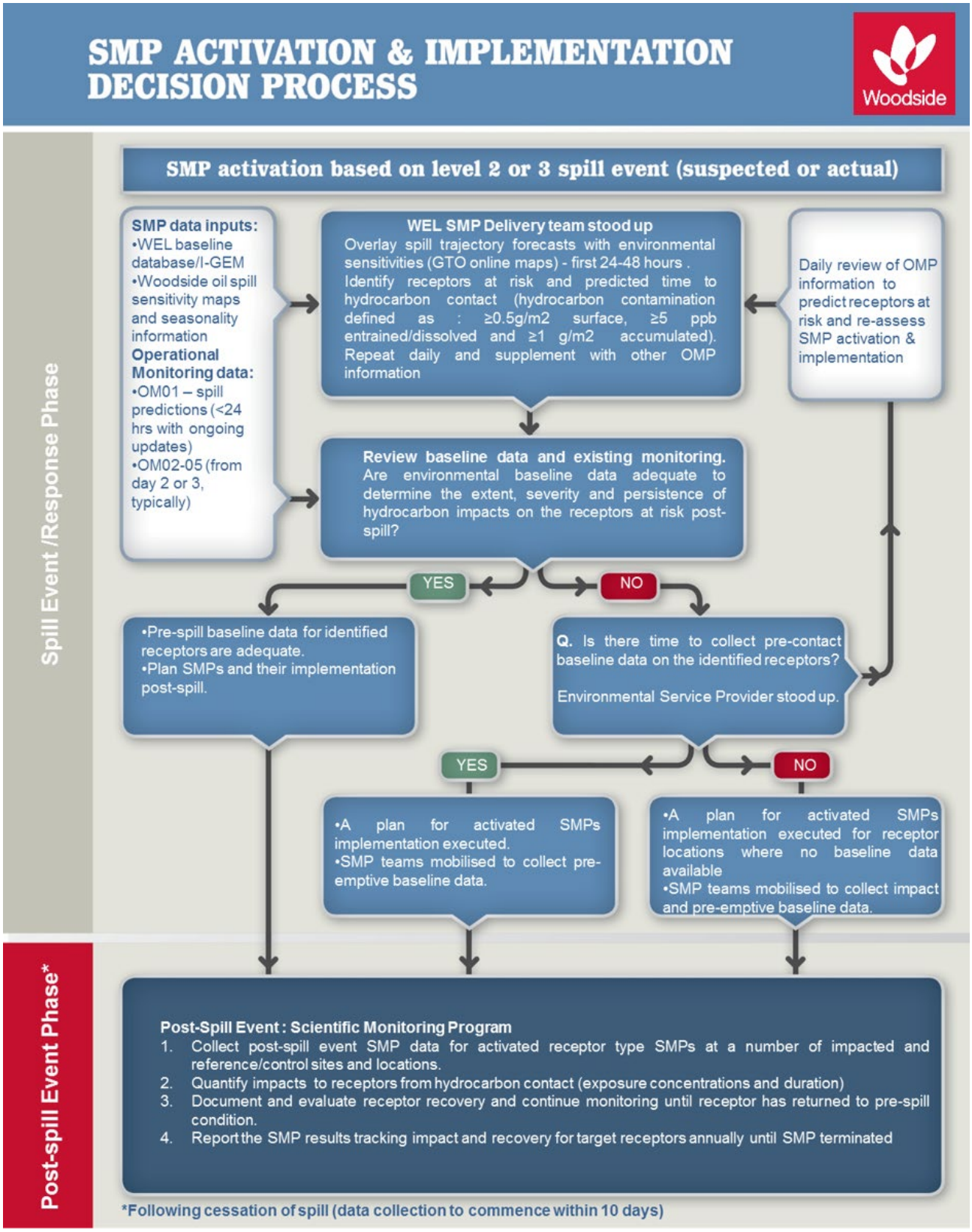

Figure C-2: Activation and Implementation Decision-tree for Oil Spill Environmental Monitoring

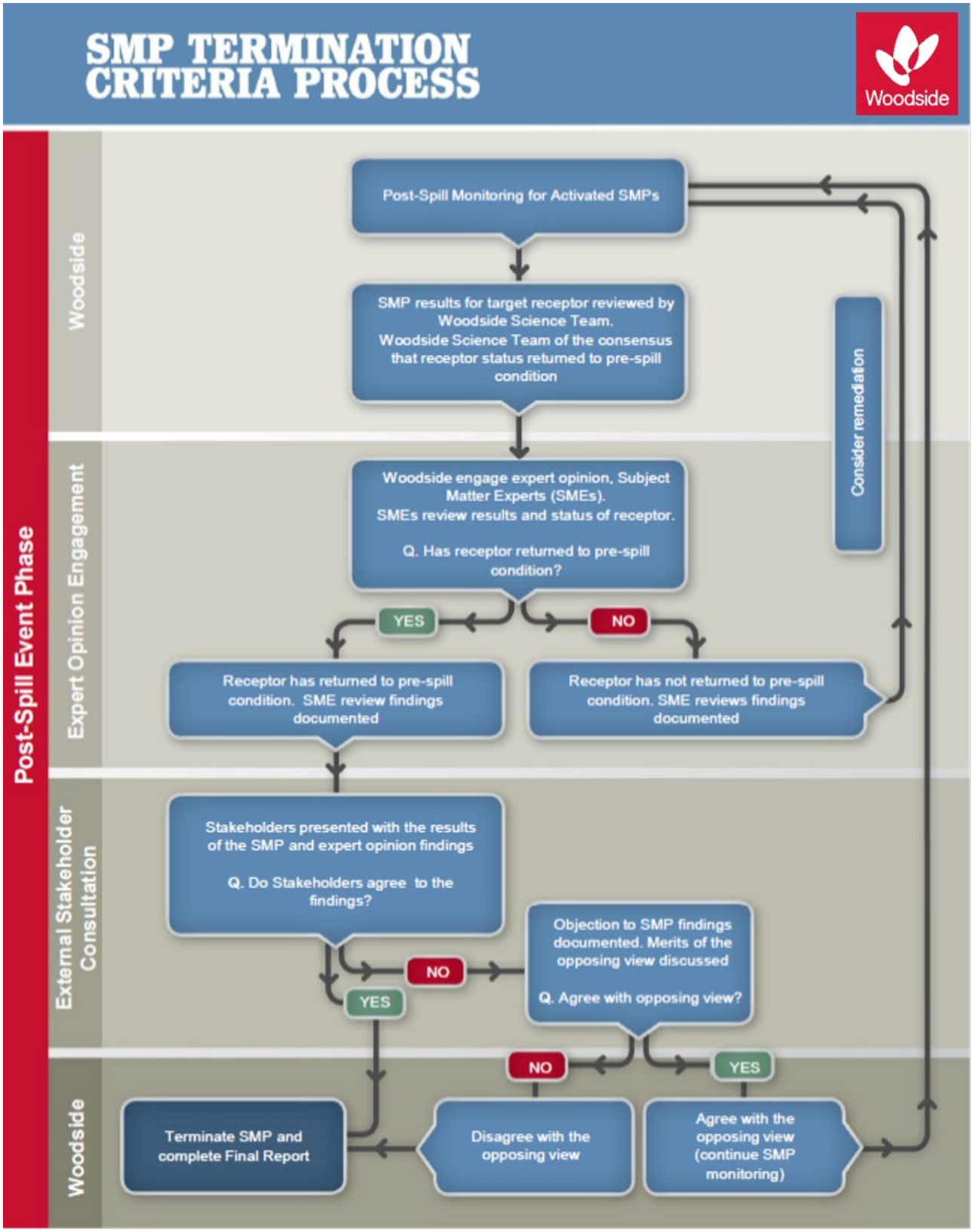

Figure C-3: Termination Criteria Decision-tree for Oil Spill Environmental Monitoring

Receptors at Risk and Baseline Knowledge

In order to assess the baseline studies available and suitability for oil spill scientific monitoring, Woodside maintains knowledge of environmental baseline studies through the upkeep and use of its Environmental Knowledge Management System.

Woodside's Environmental Knowledge Management System is a centralised platform for scientific information on the existing environment, marine biodiversity, Woodside environmental studies, key environmental impact topics, key literature and web-based resources. The system comprises a number of data directories and an environmental baseline database, as well as folders within the 'Corporate Environment' server space. The environmental baseline database was set up to support Woodside's SMP preparedness and as a SMP resource in the event of an unplanned hydrocarbon spill. The environmental baseline database is subject to updates including annual reviews completed as part of SMP standby contract. This database is accessed pre-PAP to identify Pre-emptive Baseline Areas (PBAs) where hydrocarbon contact is predicted to occur <10 days.

In addition to Woodside's Environmental Knowledge Management System, it is acknowledged that many relevant baseline datasets are held by other organisations (e.g. other oil and gas operators, government agencies, state and federal research institutions and non-governmental organisations). In order to understand the present status of environmental baseline studies a spatial environmental metadata database for Western Australia (Industry-Government Environmental Metadata, I-GEM) was established. IGEM is a collaboration comprising oil and gas operators (including Woodside), government and research agencies and other organisations. IGEM held data were integrated into the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA)[7] in 2020. The Index of Marine Surveys for Assessments (IMSA) is an online portal for information about marine-based environmental surveys in Western Australia. IMSA is a project of the Department of Water and Environmental Regulation (the department) for the systematic capture and sharing of marine data created as part of an environmental impact assessment (EIA).

In the event of an unplanned hydrocarbon release, Woodside intends to interrogate the information on baseline studies status as held by the various databases (e.g. Woodside Environmental Knowledge Management System, IMSA and other sources of existing baseline data) to identify Pre-emptive Baseline Areas (PBAs), i.e., receptors at risk where hydrocarbon contact is predicted to be >10 days, and baseline data can be collected before hydrocarbon contact.

Reporting

For the scientific monitoring program relevant regulators will be provided with:

- Annual reports summarising the SMPs deployed and active, data collection activities and available findings; and
- Final reports for each SMP summarising the quantitative assessment of environmental impacts and recovery of the receptor once returned to pre-spill condition and termination of the monitoring program.

The reporting requirements of the scientific monitoring program will be specific to the individual SMPs deployed and terms of responsibilities, report templates, schedule, quality assurance/ quality control (QA/QC) and peer-review will be agreed with the contractors engaged to conduct the SMPs. Compliance and auditing mechanisms will be incorporated into the reporting terms.

[7] https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort

ANNEX D: MONITORING PROGRAM AND BASELINE STUDIES FOR THE PETROLEUM ACTIVITIES PROGRAM

Table D-1: Oil Spill Environmental Monitoring – scientific monitoring program scope for the Petroleum Activities Program based on Spill EMBAs

Receptors to be Monitored	Receptor Areas - Potential Impact and Reference Scientific Monitoring Sites (marked X)																																							
	Applicable SMP	Kimberley AMP	Agro-Rowley Terrace AMP	Montebello AMP	Dampier AMP	Carnarvon Canyon AMP	Ningaloo AMP	Gascoyne AMP	Shark Bay Open Ocean (including AMP)	Abrolhos AMP	Jurien AMP	Two Rocks AMP	Perth Canyon AMP	Geographe AMP	South-west Corner AMP	Ashmore Reef and AMP	Seringapatam Reef	Scott Reef (North and South)	Mermaid Reef and AMP	Clerke Reef and State Marine Park	Imperieuse Reef and State Marine Park	Rankin Bank	Glomar Shoals	Rowley Shoals (including Sate Maine Park)	Fantome Shoal	Adele Island	Lacepede Islands	Montebello Islands (including State Marine Park)	Lowendal Islands (including State Nature Reserves)	Barrow Island (including State Nature Reserves, State Marine Park and Marine Management Area)	Muiron Islands (WHA, Marine Management Area)	Pilbara Islands - Southern Island Group (Serrurier, Thevenard and Bessieres Islands - State Nature	Pilbara Islands - Northern Island Group (Sandy Island Passage Islands - State nature reserves)	Abrolhos Islands	Kimberley Coast	Dampier Peninsula	Northern Pilbara Shoreline	Ningaloo Coast (North/ North West Cape, Middle and South) (WHA, and State Marine Park)	Shark Bay - Open Ocean Coast	Shark Bay (WHA, State Marine Park)	Ngari Capes State Marine Park
Habitat																																								
Water Quality	SM01	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marine Sediment Quality	SM02	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Coral Reef	SM03	X		X												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
Seagrass / Macro-Algae	SM03	X									X					X	X	X									X	X	X	X	X	X	X	X	X	X	X	X	X	X
Deeper Water Filter Feeders	SM03	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X						X			
Mangroves and Saltmarsh	SM04																											X						X	X	X	X	X		X	
Species																																								
Sea Birds and Migratory Shorebirds (significant colonies/ staging sites/ coastal wetlands)	SM05	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marine Turtles (significant nesting beaches)	SM06	X	X	X	X		X	X	X							X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	
Pinnipeds (significant colonies/ haul-out sites)	SM07									X	X	X			X																									X
Cetaceans – Migratory Whales	SM08	X	X	X	X		X	X	X	X	X	X	X	X	X			X									X	X	X	X	X			X	X	X		X	X
Oceanic and Coastal Cetaceans	SM08	X	X	X	X		X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dugongs	SM08	X							X							X												X	X	X	X	X	X		X	X	X	X	X	
Sea Snakes	SM08	X		X	X			X	X	X						X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
Whale Sharks	SM08			X			X	X										X										X	X	X	X						X			
Other Shark and Ray Populations	SM08, SM09	X	X	X	X		X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fish Assemblages	SM09	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Socio-economic																																								
Fisheries – Commercial	SM10		X	X	X	X	X	X	X	X	X	X										X	X	X	X			X	X	X		X	X	X	X	X	X	X	X	X
Fisheries – Traditional	SM10															X	X	X									X												X	
Tourism (incl. recreational fishing)	SM10	X		X			X	X	X		X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X

	Receptor areas identified as Pre-emptive Baseline Areas (based on criteria of surface contact and/or entrained hydrocarbon contact ≤10 days (Offshore Australian Marine Parks contacted by hydrocarbons in this timeframe also noted)
	Receptor areas identified as Pre-Emptive Baseline Areas in the response phase >10 days (based on criteria of surface contact and/or entrained hydrocarbon contact >10 days)
	Receptor areas that may be identified as impact or reference sites in the event of major hydrocarbon release and would be identified as part of the SMP planning process

Table D-2: Baseline Studies for the SMPs applicable to identified Pre-emptive Baseline Areas for the Petroleum Activities Program

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Montebello AMP	Barrow, Montebello and Lowendal Islands	Ningaloo Coast and the Muiron Islands
Benthic Habitat (Coral Reef)	**SM03** Quantitative assessment using image capture using either diver held camera or towed video. Post analysis into broad groups based on taxonomy and morphology.	**Studies:**		
		Coral Reefs & Filter Feeders 1. Montebello Marine Park, 2019, Identification and qualitative descriptions of benthic habitat. 2. Montebello Australian Marine Parks – 2019 – Baseline survey on benthic habitats. 3. Pluto Trunkline within Montebello Marine Park – Monitoring marine communities.	Barrow Island: East and West Coast baseline and monitoring for soft sediment, limestone pavement and coral assemblages (Chevron) Barrow, Montebello and Lowendal Islands: 1. Benthic community monitoring as part of DBCA Western Australian Marine Monitoring Program (2015-ongoing). 2. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013).	1. DBCA LTM Ningaloo Reef program: 1991-ongoing. 2. AIMS/DBCA 2014 Baseline Ningaloo and Muiron Islands Survey – repeat and expansion on the LTM (Co-funded survey: Woodside and AIMS). 3. Pilbara Marine Conservation Partnership. 4. WAMSI LTM Study: Ningaloo Research node: 2009 -10 over the length of Ningaloo reef system (with a focus on coral and fish recruitment). 5. Ningaloo Outlook (CSIRO) - Shallow and Deep Reefs Program (2015-ongoing). 6. Ningaloo Collaboration Cluster: Habitats of the Ningaloo Reef and adjacent coastal areas determined through hyperspectral imagery.
		Methods:		
		1.ROV Transects 2. Benthic habitat mapping, multibeam acoustic swathing. 3. ROV video.	Barrow Island: Coral habitat – mapping, rapid visual assessment, size-class frequency, photo quadrats – live coral cover and survival, tagged corals – growth and survival and coral recruitment Benthic macro-invertebrate surveys – video belt transects Barrow, Montebello and Lowendal Islands: 1. Fixed long-term monitoring sites. Diver video transect. 2. Towed video, benthic trawl and sled.	1. LTM transects, diver based (video) photo quadrats, specimen collection. 2. LTM sites, transects, diver-based video quadrat. 3. Diver video transects, still photography, video and in situ visual estimates from transects, quadrats, manta-tows, towed video and ROV. 4. Video point intercept transects recorded by towed video or diver hand-held video camera. 5. Video transects. 6. LTM transects, diver based (video) photo quadrat. 7. LTM transects, diver based (video) photo quadrat.
		References and Data:		
		1. Advisian 2019 2. Keesing 2019 3. McLean et al. 2019	Barrow Island: Chevron Australia (2015a and b) DATAHOLDER: Chevron Australia Barrow, Montebello and Lowendal Islands: 1. WA Department of Biodiversity, Conservation and Attractions (DBCA) DATAHOLDER: DBCA 2. Pitcher et al. 2016 DATAHOLDER: CSIRO	1. DBCA unpublished data. DATAHOLDER: DBCA 2. AIMS 2015. DATAHOLDER: AIMS. 3. Pilbara Marine Conservation Partnership DATAHOLDER: CSIRO 4. Depczynski et al. 2011 DATAHOLDER: AIMS, DBCA and WAMSI. 5. CSIRO 2019 – Ningaloo Outlook Program 6. Murdoch University - Kobryn et al 2011 and Keulen & Langdon 2011.
Benthic Habitat (Seagrass and Macro-algae)	**SM03** Quantitative assessment using image capture using either diver held camera or towed video. Post analysis into broad groups based on taxonomy and morphology.	**Studies:**		
		N/A – see Table D-1	Barrow Island: East Barrow Island – Chevron baseline and monitoring	1. Quantitative descriptions of Ningaloo sanctuary zones habitats types including lagoon and offshore areas – Cassata and Collins (2008). 2. CSIRO/BHP Ningaloo Outlook Program. 3. Ningaloo Collaboration Cluster: Habitats of the Ningaloo Reef and adjacent coastal areas determined through hyperspectral imagery. 4. Australian Institute of Marine Science – CReefs: Ningaloo Reef Biodiversity Expeditions (2008-2010).
		Methods:		
			East Barrow - seagrass photo quadrats (30 m transects) during spring/summer and winter periods Macroalgae photo quadrats, visual census and biomass and specimen sampling	1. Video transects to ground truth aerial photographs and satellite imagery. 2. Diver video transects. 3. LTM transects, diver based (video) photo quadrat. 4. LTM transects, diver based (video) photo quadrats, specimen collection.
		References/Data:		

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Montebello AMP	Barrow, Montebello and Lowendal Islands	Ningaloo Coast and the Muiron Islands
			Barrow Island: Chevron Australia (2015a and b) DATAHOLDER: Chevron Australia	1. Cassata and Collins 2008. DATAHOLDER: Curtin University – Applied Geology. 2. CSIRO – Ningaloo Outlook Program 3. Murdoch University - Kobryn et al 2011 and Keulen and Langdon 2011. 4. AIMS (2010) - http://www.aims.gov.au/creefs
Benthic Habitat (Deeper Water Filter Feeders)	**SM03** Quantitative assessment using image capture using towed video. Post analysis into broad groups based on taxonomy and morphology.	**Studies:**		
		As above (SM03 Coral Reefs)		1. WAMSI 2007 deep-water Ningaloo benthic communities' study, Colquhoun and Heyward (2008). CSIRO/BHP Ningaloo Outlook Program - Deep reef themes 2020
		Methods:		
				1. Towed video and benthic sled (specimen sampling). Side-scan sonar and AUV transects.
		References and Data:		
				1. Colquhoun and Heyward (eds) 2008. DATAHOLDER: WAMSI, AIMS. CSIRO – Ningaloo Outlook 2020
Mangroves and Saltmarsh	**SM04** Aerial photography and satellite imagery will be used in conjunction with field surveys to map the range and distribution of mangrove communities.	**Studies:**		
		N/A – see Table D-1	Barrow Island: East and West Coast baseline and monitoring – mapping (HR aerial imagery) and vegetation surveys	1. Atmospheric correct and land cover classification, NW Cape. 2. Woodside hold Rapid Eye imagery of the Ningaloo Reef and coastal area. 3. Hyperspectral survey (2006) of Ningaloo Reef and coastal area (not yet analysed for Mangroves). 4. North West Cape sensitivity mapping 2012 included Mangrove Bay. Global mangrove distribution as mapped by the USGS and located on UNEP's Ocean Data viewer.
		Methods:		**Methods:**
			Barrow – Chevron (2015a and b) – HR mapping (aerial images) and vegetation surveys using belt transects – species composition, estimated total canopy cover, total number of trees, pneumatophore density and canopy density.	1. Modular Inversion Program. May 2017 2. Rapid Eye imagery – High resolution satellite imagery from October/November/December 2011 and 2017. 3. Remote sensing – acquisition of HyMap airborne hyperspectral imagery and ground truthing data collection. 4. Reconnaissance surveys of the shorelines of the North West Cape and Muiron Islands. Remote sensing study of global mangrove coverage.
		References/Data:		
			Barrow Island: Chevron Australia (2015a and b) DATAHOLDER: Chevron Australia	1. EOMAP 2017 DATAHOLDER: Woodside. 2. AAM 2014. Dataholder: Woodside 3. Kobryn et al. 2013. DATAHOLDER: Murdoch University, AIMS; Woodside. 4. Joint Carnarvon Basin Operators, 2012. DATAHOLDER: Woodside and Apache Energy Ltd. http://data.unep-wcmc.org/
Seabirds	**SM05**	**Studies:**		

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Montebello AMP	Barrow, Montebello and Lowendal Islands	Ningaloo Coast and the Muiron Islands
	Visual counts of breeding seabirds, nest counts, intertidal bird counts at high tide	N/A – see Table D-1	Barrow Island: Barrow Island Seabird Monitoring Program (Chevron) Barrow, Montebello and Lowendal Islands: 1. Johnston et al (2013) general inventory and distribution for the Pilbara region (WA Museum) 2. Santos – Integrated Shearwater Monitoring Program (1994-2016) 3. Santos – monitoring of seabird breeding colonies throughout the Lowendal Group of Islands.	1. LTM Study of marine and shoreline birds: 1970-2011. 2. LTM of shorebirds within the Ningaloo coastline (Shorebirds 2020). 3. Exmouth Sub-basin Marine Avifauna Monitoring Program (Quadrant Energy/Santos). 4. Seabird and Shorebird baseline studies, Ningaloo Region – Report on January 2018 bird surveys. 5.Wedge-tailed shearwater foraging behaviour in the Exmouth Region – Final Report
		Methods:		
			Barrow Island – 2008-ongoing annual surveys: abundance, nest density, presence/absence of egg or chick/fledgling Barrow, Montebello and Lowendal Islands: 1. Desktop review (WA Museum) 2. Nest burrow density, presence/absence of eggs or chicks in burrows 3. The distribution and abundance of other nesting seabirds within the Lowendal Island group, including up to 45 islands and islets	1. Counts of nesting areas, counts of intertidal zone during high tide. 2. The Shorebirds 2020 database comprises the most complete shorebird count data available in Australia. The data have been collected by volunteer counters and BirdLife Australia staff for approximately 150 roosting and feeding sites, mainly in coastal Australia. The data go back as far as 1981 for key areas. 3. The Exmouth Sub-basin Marine Avifauna Monitoring Program undertook a detailed assessment of seabird and shorebird use in the Exmouth Sub-basin. Four aerial surveys and four island surveys were conducted between February 2013 and January 2015 for this Program, inclusive of the mainland coasts, of shore islands and a 2,500 km^2 area of ocean adjacent to the Exmouth Sub-basin. 4.Shorebird counts, Shearwater Burrow Density. 5. Telemetry (GPS & Satellite).
		References and Data:		
			Barrow – Chevron (2015c) DATAHOLDER: Chevron Australia Barrow, Montebello and Lowendal Islands: 1. Johnston et al (2013) DATAHOLDER: (WA Museum 2. Santos DATAHOLDER: Santos 3. Surman and Nicholson (2012) DATAHOLDER: Santos	1. Johnstone et al. 2013. DATAHOLDER: WA MUSEUM. AMOSC/DBCA (DPaW) 2014. 2. BirdLife Australia DATAHOLDER: Woodside and BirdlLife Australia 3. Surman & Nicholson 2015. 4. BirdLife Australia: DATAHOLDER: Woodside 5. Cannel et al. 2019 DATAHOLDER: UWA and BirdLife Australia
Turtles	**SM06** Beach surveys (recording species, nest counts, false crawls)	**Studies:**		
		N/A – see Table D-1	Barrow Island: Chevron Australia: long term monitoring programs for flatback turtles Barrow, Montebello and Lowendal Islands: 1. Marine turtle monitoring as part of DBCA long-term turtle monitoring program (ongoing). 2. LTM Study of Green, Flatback, Hawksbill turtles on beaches within the Barrow, Lowendal and Montebello Island Complex. 3. Santos 2013 turtle nesting survey on the Lowendal islands. 4. Varanus Island Turtle monitoring program (2005 – present). North West Shelf Flatback Conservation Program – conserve North West Shelf stock – scope covers all summer nesting flatback turtles - https://flatbacks.dbca.wa.gov.au/about	1. Exmouth Islands Turtle Monitoring Program. 2. Ningaloo Turtle Program 3. Turtle activity and nesting on the Muiron Islands and Ningaloo Coast (2018). 4. Spatial and temporal use of inter-nesting habitat by sea turtles along the Murion Islands and Ningaloo Coast – 2018-2019
		Methods:		

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Montebello AMP	Barrow, Montebello and Lowendal Islands	Ningaloo Coast and the Muiron Islands
			Barrow Island – Chevron Australia: 2005 -ongoing annual surveys, flatback turtles – nesting success, track counts and satellite tracking, hatchling survival and dispersal. Barrow, Montebello and Lowendal Islands: 1. Nesting demographics 2. Nesting demographics 3. Tagging and nest counts 4. Tagging and nest counts at Varanus, Beacon, Bridled, Abutilon and Parakeelya islands. North West Shelf Flatback Conservation Program - https://flatbacks.dbca.wa.gov.au/program-activities	1. Astron (on behalf of Santos) to address a gap in the knowledge of turtle numbers at key locations (offshore islands within the region) that are not currently part of an existing monitoring programs (e.g. the NTP). Field surveys were conducted in October 2013 and January 2014. Surveys were conducted on 12 islands, with each island surveyed once (with the exception of Beach 8 at North Muiron Island) and all tracks counted. 2. Long term trends in marine turtle populations, beach surveys, track counts, best location, mortality counts. 3. On-beach monitoring and aerial surveys. 4. Tagging (satellite transmitter), analysis of internesting, migration and foraging grounds movements and behaviour.
		References/Data:		
			Barrow Island – Chevron (2015c) DATAHOLDER: Chevron Australia Barrow, Montebello and Lowendal Islands: 1. DBCA 2. Pendoley 2005. AMOSC/DBCA (DPaW) 2014. 3. Santos (2014) DATAHOLDER: Santos 4. Santos (2005-prsesent) DATAHOLDER: Santos North West Shelf Flatback Conservation Program - https://flatbacks.dbca.wa.gov.au/program-activities	1.Santos – Report. 2. NTP Annual Reports DATAHOLDERS: DBCA. Reports available at http://www.ningalooturtles.org.au/media_reports.html 3.Rob et al. 2019 DATAHOLDER: DBCA 4.Tucker et al. 2019 DATAHOLDER: DBCA
Fish	**SM09** Baited Remote Underwater Video Stations (BRUVS),	**Studies:**		
			Barrow Island: Chevron: East and West Coast intertidal and subtidal baseline and monitoring Barrow, Montebello and Lowendal Islands: 1. Pilbara Marine Conservation Partnership Stereo BRUVS drops in shallow water (~10m) from Exmouth to Barrow Islands in 2015. 2. Finfish monitoring as part of DBCAs Western Australian Marine Monitoring Program (2015-ongoing).	1. AIMS/DBCA 2014 Baseline Ningaloo Survey – repeat and expansion on the LTM (Co-funded survey: Woodside and AIMS). 2. Demersal fish populations – baseline assessment (AIMS/WAMSI). 3. DBCA study measured Species Richness, Community Composition, and Target Biomass, through UVC. BRUVS studies determining max N, Species Richness, and Biomass. 4. Pilbara Marine Conservation Partnership Stereo BRUVS in shallow water (~10m) in 2014 in northern region of the Ningaloo Marine Park, in shallow water (~10m) inside the lagoonal reef of the Ningaloo Marine Park in 2016, in deep water (~40m) across the length of the Ningaloo Marine Park in 2015, in shallow water outside of Ningaloo Reef from Waroora to Jurabi in 2015 and offshore of the Muiron Islands in 2015. 5. Elasmobranch faunal composition of Ningaloo Marine Park. 6. Juvenile fish recruitment surveys at Ningaloo reef. 7. Demersal fish assemblage sampling method comparison 8. Ningaloo Outlook (CSIRO) - Shallow and Deep Reefs Program
		Methods:		
		1. Semi V Wing trawl net or an epibenthic sled. 2. ROV Video.	Barrow Island – Chevron (2015a and b) – demersal fish: stereo BRUVS (subtidal habitats) and netting combination for mangrove habitat Barrow, Montebello and Lowendal Islands: 1. Stereo BRUVS. 2. Diver underwater visual surveys (UVS).	1. UVC surveys. 2. BRUVS Study with 304 video samples at three specific depth ranges (1-10 m, 10-30 m and 30-110m). 3. UVC surveys. 4. Stereo BRUVS 5. Snorkel and Scuba surveys. 5. Underwater visual census. 6. Diver operated video. 7. Diver UVC. 8. Diver UVC, stereo BRUVs
		References/Data:		

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Montebello AMP	Barrow, Montebello and Lowendal Islands	Ningaloo Coast and the Muiron Islands
		1. Keesing 2019. 2. McLean et al. 2019.	Barrow Island – Chevron Australia (2015a and b) DATAHOLDER: Chevron Barrow, Montebello and Lowendal Islands: 1. Unpublished report CSIRO DATAHOLDER: CSIRO, CSIRO Data centre [1] 2. DBCA	1. AIMS 2014. DATAHOLDER: AIMS/Woodside. 2. Fitzpatrick et al. 2012. DATAHOLDERS: WAMSI, AIMS. 3. DBCA unpublished data. DATAHOLDER: DBCA/AIMS. 4. CSIRO Data DATAHOLDER: CSIRO Data Centre [1] 5. Stevens, J.D., P.R., White, W.T., McAuley, R.B., Meekan, M.G. 2009. 6. WAMSI unpublished data DATAHOLDER: AIMS [2] 7. DATAHOLDER: WAMSI 8. CSIRO – Ningaloo Outlook 2020.

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ANNEX E: TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef – Refer to Mangrove/ Turquoise Bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrohlos Islands: Pelseart Group
Abrohlos Islands: Wallabi Group
Abrohlos Islands: Easter Group
Dampier
Rankin Bank & Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands – Southern Island Group
Montebello Island – Stephenson Channel Nth TRP
Montebello Island – Champagne Bay and Chippendale channel TRP
Montebello Island – Claret Bay TRP
Montebello Island – Hermite/Delta Island Channel TRP
Montebello Island – Hock Bay TRP
Montebello Island – North and Kelvin Channel TRP
Montebello Island – Sherry Lagoon Entrance TRP
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Island – Dampier
Rosemary Island – Dampier
Legendre Island – Dampier
Karratha Gas Plant

KGP to Withnell Creek
KGP to Northern Shore
KGP Fire Pond & Estuary
KGP to No Name Creek
Broome
Sahul Shelf Submerged Banks and Shoals
Clerke Reef (Rowley Shoals)
Imperieuse Island (Rowley Shoals)
Mermaid Reef (Rowley Shoals)
Scott Reef
Oiled Wildlife Response
Exmouth
Dampier region
Shark Bay

23. APPENDIX I FIRST STRIKE PLAN

Macedon Operations (Cwth) – Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

November 2024
Revision 0c

TABLE OF CONTENTS

CONTROL AGENCIES AND INCIDENT CONTROLLERS

Source	Location	Level	Jurisdictional Authority/ Hazard Management Agency	Control Agency	Incident Controller
Spill from facility including subsea infrastructure Note: pipe laying and accommodation vessels are considered a "facility" under Australian regulations	Commonwealth waters	1	NOPSEMA	Woodside	Person In Charge (PIC) with support from Onshore Team Leader (OTL)
		2/3		Woodside	Corporate Incident Management Team Incident Commander (CIMT IC)
	State waters	1/2/3	Western Australian Department of Transport (DoT)	DoT	DoT Incident Controller
	Within port limits	1	DoT	Port Authority	Port Harbour Master
		2/3		Port Authority/ DoT	Port Harbour Master/ DoT Incident Controller
Spill from vessel Note: SOPEP should be implemented in conjunction with this document	Commonwealth waters	1	Australian Marine Safety Authority (AMSA)	AMSA	Vessel Master
		2/3		AMSA	AMSA (with response assistance from Woodside)
	State waters	1/2/3	DoT	DoT	DoT Incident Controller
	Within port limits	1	DoT	Port Authority	Port Harbour Master
		2/3		Port Authority/ DoT	Port Harbour Master/ DoT Incident Controller

SPILLS IN STATE WATERS

As detailed in the table above, in the event of a hydrocarbon spill (hereafter 'spill') where Woodside Energy Ltd ('Woodside') is the responsible party and the spill may impact State waters and shorelines, Woodside (or the Vessel Master) will commence the initial response actions and notify the Western Australian Department of Transport (DoT).

Initially Woodside will be required to make available an appropriate number of suitably qualified persons to work in the DoT IMT (APPENDIX F – Woodside Liaison Officer Resources to DoT). DoT 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 or to commence the initial response actions to a spill prior to DoT establishing incident control in line with DoT *Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements* (July 2020). Cost recovery arrangements for offshore marine pollution incidents (MOP) are in accordance with Section 9 of the Guidance Note:

https://www.transport.wa.gov.au/mediaFiles/marine/MAC_P_Westplan_MOP_OffshorePetroleumIndGuidance.pdf

Woodside's Incident Management Structure for a hydrocarbon spill, including Woodside Liaison Officer's command structure within DoT can be seen at APPENDIX E – Woodside Incident Management Structure.

The coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines is shown in APPENDIX D – Coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines.

RESPONSE PROCESS OVERVIEW

For guidance on credible scenarios and hydrocarbon characteristics, refer to APPENDIX A		
ALL INCIDENTS	Notify the Woodside Communication Centre (WCC) on: [3]	
	Incident Controller or delegate to make relevant notifications in **Table 1-1** of this Oil Pollution First Strike Plan.	
LEVEL 1	**FACILITY INCIDENT**	**VESSEL INCIDENT**
	Coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan. Remember to download each Operational Plan.	Notify AMSA and coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan Remember to download each Operational Plan.
	If the spill escalates such that the site cannot manage the incident, inform the WCC on: [3] and escalate to a level 2/3 incident.	
LEVEL 2/3	**FACILITY INCIDENT**	**VESSEL INCIDENT**
	Handover control to CIMT and notify DoT.	Handover control to AMSA and stand up CIMT to assist.
	Commence quick revalidation of the recommended strategies on **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.	If requested by AMSA: Commence quick revalidation of the recommended strategies on **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.
	Create an Incident Action Plan (IAP) for all ongoing operational periods. The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see the OSPRMA Appendix A	If requested by AMSA: Create an IAP for all ongoing operational periods. The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational NEBA see the OSPRMA Appendix A

1. NOTIFICATIONS

The Incident Controller or delegate must ensure the below notifications (Table 1-1) are completed within the designated timeframes.

For spills from a vessel, relevant notifications must be undertaken by a WEL representative.

Table 1-1: Notifications

In the event of an incident between campaign vessels, also activate relevant vessel Emergency Response Plans and/or Bridging Documents

Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
NOTIFICATIONS FOR ALL LEVELS OF SPILL							
Immediately	Offshore Installation Manager (OIM) or Vessel Master	Woodside Communication Centre (WCC)	Corporate Incident Management Team Incident Commander (CIMT IC)	[3]	Verbally notify WCC of event and estimated volume and hydrocarbon type.	Verbal	
Within 2 hours	Woodside Site Rep (WSR), Corporate Incident Management Team CIMT IC or Delegate	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA[1])	Incident notification office	[4]	Verbally notify NOPSEMA for spills >80L. Record notification using Initial Verbal Notification Form or equivalent and send to NOPSEMA as soon as practicable (cc to NOPTA and DEMIRS).	Link	
Within 3 days	WSR, CIMT IC or Delegate				Provide a written NOPSEMA Incident Report Form as soon as practicable (no later than 3 days after notification) (cc to NOPTA and DEMIRS) NOPSEMA [4] NOPTA [5] DEMIRS [6]	[4]	
As soon as practicable	CIMT IC or Delegate	Woodside	Environment Unit Leader	As per roster	Verbally notify Unit Leader of event and seek advice on relevant performance standards from EP	Verbal	
Within 2 hours of becoming aware of a marine pollution incident (MOP) that occurs in or may impact state waters	CIMT IC or Delegate	WA Department of Transport	DoT Maritime Environmental Emergency Response Unit (MEER) Duty Officer	[7]	Verbally notify DoT MEER Duty Officer that a spill has occurred and, if required, request use of equipment stored in Karratha. Follow up with a written POLREP as soon as practicable following verbal notification. Additionally, DoT to be notified if spill is likely to extend into WA State waters. Request DoT to provide Liaison to WEL IMT.	[7]	
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	[8]	The Marine Park Compliance Duty Officer is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken. This notification should include: • titleholder details • time and location of the incident • proposed response arrangements and locations as per the OPEP • contact details for the response coordinator • confirmation of access to relevant monitoring and evaluation reports when available.	Verbal	
As soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed	CIMT IC or Delegate	WA Department of Biodiversity, Conservation	Duty Officer	[9]	Phone call notification	Verbal	

[1] Notification to NOPSEMA must be from a Woodside Representative.

by WA Department of Biodiversity, Conservation and Attractions		and Attractions (DBCA)					
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 and 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 Macedon Operations (Cwth). 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 additional 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 Macedon Operations (Cwth). Relevant cultural authorities will be re-assessed throughout the response period.	Verbal initially	
ADDITIONAL NOTIFICATIONS TO BE MADE ONLY IF SPILL IS FROM A VESSEL							
"Without delay" as per *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) s 11(1)	Vessel Master	Australian Maritime Safety Authority (AMSA)	Response Coordination Centre (RCC)	[10]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Harmful Substance Report (POLREP) as soon as practicable following verbal notification.	[10]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT IC or Delegate	AMOSC	AMOSC Duty Manager	[11]	Notify AMOSC that a spill has occurred and follow-up with an email from the **CIMT IC/ CIMT Deputy IC/ CMT Leader** to formally activate AMOSC. Determine what resources are required consistent with the AMOS Plan and detail in a Service Contract that will be sent to Woodside from AMOSC upon activation.	[11]	
As soon as practicable	CIMT IC or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	[12]	Contact OSRL duty manager and request assistance from technical advisor in Perth. Send the completed notification form to OSRL as soon as practicable.	[12]	
					For mobilisation of resources, send the Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside. OSRL can advise the names on the call out authority list, if required.	[12]	
As soon as practicable if extra personnel are required for incident support	CIMT IC or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	[13]	Activate the contract with MSRC (in full) for the provision of up to 30 personnel depending on what skills are required. Please note that provision of these personnel from MSRC are on a best endeavours basis and are not guaranteed.	Verbal	

2. RESPONSE TECHNIQUES

Table 2-1: Response techniques

Technique	Spill type		Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	MDO	Dry gas					
Operational monitoring –tracking buoy (OM02)	**Yes**	**N/A**	**ALL**	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	**DAY 1:** Tracking buoy deployed within 2 hours.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02) of The Operational Monitoring Operational Plan. Deploy tracking buoy in accordance with Link.
Operational monitoring – predictive modelling (OM01)	**Yes**	**N/A**	**ALL**	Undertake initial modelling using the Rapid Assessment Oil Spill Tool and weathering fate analysis using Automated Data Inquiry for Oil Spills (ADIOS) or refer to the hydrocarbon information in **Appendix A.**	Situation or Environment	**DAY 1:** Initial modelling within 6 hours using the Rapid Assessment Tool.	Predictive Modelling of Hydrocarbons to Assess Resources at Risk (OM01 of The Operational Monitoring Operational Plan). *Planning to download immediately and follow steps*
	Yes	**N/A**	**ALL**	Send Oil Spill Trajectory Modelling (OSTM) form ([14]) to RPS Response ([14]).	Situation	**DAY 1:** Detailed modelling within 4 hours of RPS Response receiving information from Woodside.	
Operational monitoring – aerial surveillance (OM02)	**Yes**	**N/A**	**ALL**	Instruct Aviation Unit Leader to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in Appendix B Form 8.	Logistics – Aviation	**DAY 1:** 2 trained aerial observers. 1 aircraft available. Report made available to the CIMT within 2 hours of landing after each sortie.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan). *Planning to download immediately and follow steps*
Operational monitoring – satellite tracking (OM02)	**Yes**	**N/A**	**ALL**	The Situation Unit Leader to action satellite imagery services. This may be obtained via: • AMOSC Duty Manager: [11] • OSRL Duty Manager: [12] • KSAT: [13] • Others identified by CIMT	Situation	**DAY 1:** Service provider will confirm availability of an initial acquisition within 2 hours. Data received to be uploaded into Woodside Common Operating Picture.	
Operational monitoring – monitoring hydrocarbons in water (OM03)	**Yes**	**N/A**	**ALL**	Consider the need to mobilise resources to undertake water quality monitoring (OM03).	Planning or Environment	**DAY 3:** Water quality assessment access and capability Daily fluorometry reports will be provided to CIMT.	Detecting and Monitoring for the Presence and Properties of Hydrocarbons in the Marine Environment (OM03 of The Operational Monitoring Operational Plan).
Operational monitoring – pre-emptive assessment of receptors at risk (OM04)	**Yes**	**N/A**	**ALL**	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	**DAY 2:** In agreement with WA DoT, deployment of 2 specialists for each of the Response Protection Areas (RPA) with predicted impacts.	Pre-emptive Assessment of Sensitive Receptors (OM04 of The Operational Monitoring Operational Plan).
Operational monitoring – shoreline assessment (OM05)	**Yes**	**N/A**	**ALL**	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	Planning or Environment	**DAY 2:** In agreement with WA DoT, deployment of 2 specialists trained in Shoreline Clean-up Assessment Technique (SCAT) for each of the RPAs with predicted impacts.	Shoreline Assessment (OM05 of The Operational Monitoring Operational Plan).
Surface dispersant	**No**	**N/A**	**N/A**	This response strategy is not recommended.			
Containment and recovery	**No**	**N/A**	**N/A**	This response strategy is not recommended.			
Mechanical dispersion	**No**	**N/A**	**N/A**	This response strategy is not recommended.			
In-situ burning	**No**	**N/A**	**N/A**	This response strategy is not recommended.			

Technique	Spill type		Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	MDO	Dry gas					
Shoreline protection and deflection	**Potentially**	**N/A**	**ALL**	No shoreline contact predicted at response thresholds (>100 g/m^2). If operational monitoring determines RPAs are at risk of contact, shoreline protection and deflection may be required. Equipment from Woodside, AMOSC and AMSA Western Australian Stockpiles mobilised. Consideration of mobilisation of interstate/international shoreline protection equipment (i.e. OSRL).	Operations and Planning	**DAY 1-2:** If required, and in liaison with WA DoT (for Level 2/3 incidents), shoreline protection operation mobilised within 48 hours to each identified RPA.	Protection and Deflection Operational Plan *Logistics to download immediately and follow steps*
Shoreline clean-up	No	**N/A**	**N/A**	No shoreline contact predicted at response thresholds (>100 g/m^2) therefore this response strategy is not recommended.			
Oiled wildlife response	**Yes**	**N/A**	**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	Initiate a wildlife first strike response prior to confirmed or imminent wildlife contact as directed by relevant Operational Monitoring techniques (OM01-05) and in liaison with DBCA.	Oiled Wildlife Response Operational Plan
Scientific monitoring (type II)	**Yes**	**N/A**	**ALL**	Notify Woodside science team of spill event.	Environment		Oil Spill Scientific Monitoring Programme – Operational Plan
SOURCE CONTROL TECNIQUES							
Subsea First Response Toolkit	**No**	**Yes**	**L2/3**	Debris clearance equipment to be mobilised prior to deployment of capping stack.	Source Control	**DAY 2:** Remotely Operated Vehicle (ROV) on Mobile Offshore Drilling Unit (MODU) ready for deployment within 48 hours subject to risk assessment and approvals, to undertake inspection and/or well intervention. ROV equipment deployed within 7 days. Intervention vessel with minimum requirement of a working class ROV and operator mobilised to with for deployment within 11 days.	Source Control Emergency Response Planning Guideline Activity Source Control Emergency Response Plan
Subsea Dispersant	**No**	**No**	**N/A**	This response strategy is not recommended			
Capping Stack	**No**	**Yes**	**L2/3**	Conventional/vertical capping stack deployment with a heavy lift vessel will be attempted if plume radius is ~25 m and environmental conditions permit (wind speed, wave height, current and plume radius).	Source Control	**DAY 1:** Identify source control vessel availability within 24 hours. Capping stack on suitable vessel mobilised to site within 16 days.	
Relief Well	**No**	**Yes**	**L2/3**	Relief well drilling will be the main technique employed to control a loss of well containment event.	Source Control	**DAY 1:** Identify source control vessel availability within 24 hours. MODU mobilised to location within 21 days (local MODU) or 29 days (MODU out of region).	

3. RESPONSE PROTECTION AREAS

Action: Provide relevant Control Agency with applicable Tactical Response Plans for any Response Protection Areas (RPAs) identified during operational monitoring.

Based on hydrocarbon spill modelling results, no sensitive receptors are predicted to be contacted at feasible response thresholds (>100 g/m^2) for the duration of the spill.

The only receptors predicted to be contacted below response threshold (~10 g/m^2) are:

- Exmouth, Ningaloo Coast WH, and Ningaloo Marine Park (State)
- Muiron Islands and Marine Management Area (MMA).

Tactical Response plans for these locations can be accessed via the Oil Spill Portal - Tactical Response Plans and include the details of potential forward operating bases and staging areas.

Oil spill trajectory modelling specific to the spill event will be required to determine the regional sensitive receptors that may be contacted beyond 48 hours of a spill.

Figure 3-1 illustrates the location of regional sensitive receptors in relation to the Macedon Operations (Cwth) Operational Area and identifies priority protection areas.

Consideration should be given to other stakeholders (including mariners) in the vicinity of the spill location. **Table 3-1** indicates the assets within the vicinity of the Macedon Operations (Cwth) Operational Area.

Table 3-1: Assets in the vicinity of the Macedon Operations (Cwth) Operational Area

Asset	Distance and Direction from Operational Area	Operator
Pyrenees Facility (Pyrenees FPSO)	~6 km NW	Woodside Energy Limited
Vincent Development (Ngujima-Yin FPSO)	~16 km NW	Woodside Energy Limited
Van Gogh/ Coniston/ Novara Development (Ningaloo Vision FPSO)	~17 km NW	Santos Limited
Corowa development (installation in Q4 2023)	~33 km NE	KATO Energy

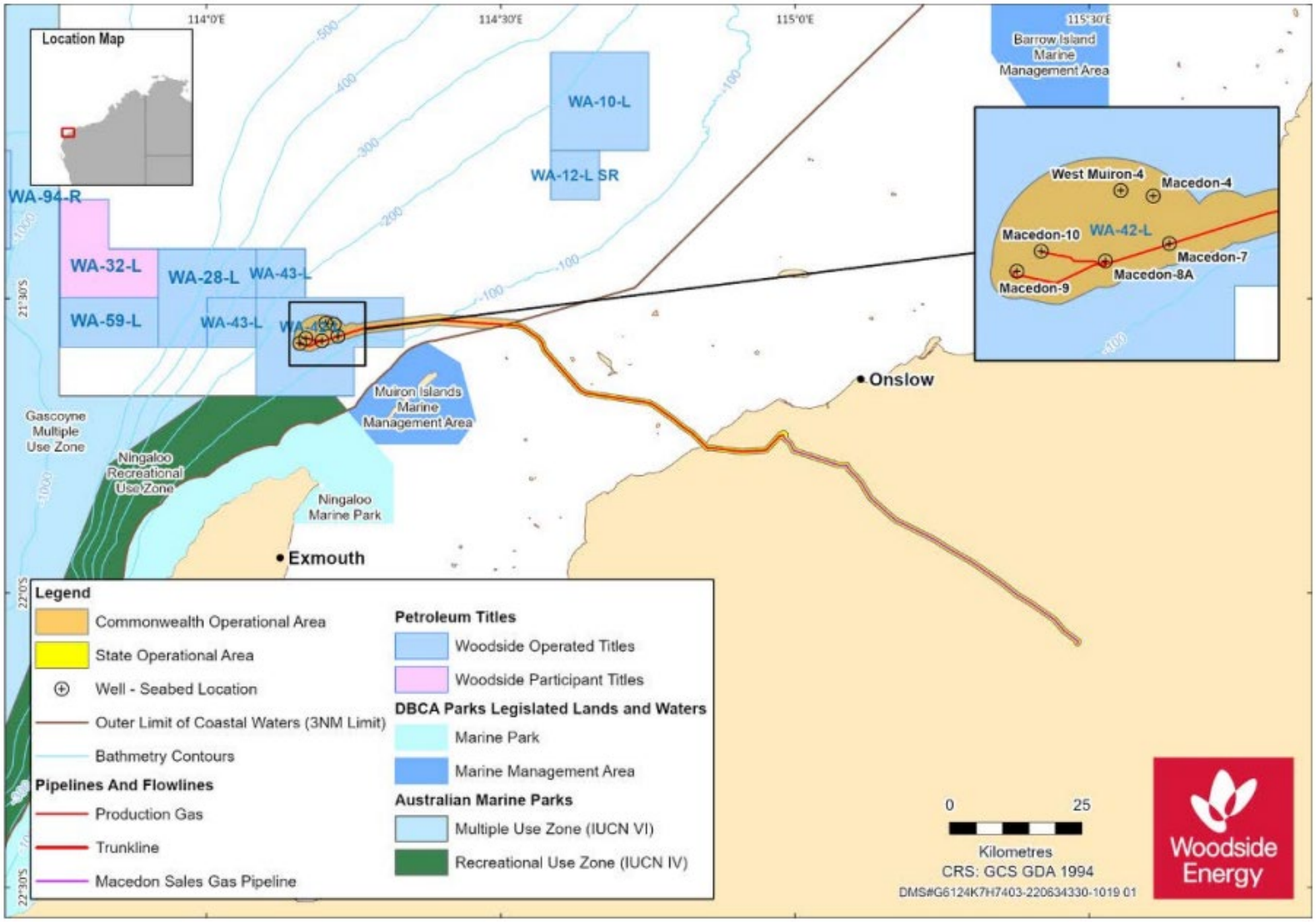


Figure 3-1: Operational area and regional sensitive receptors

4. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the Macedon Operations Environment Plan (Cwth) Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

APPENDIX A – CREDIBLE SPILL SCENARIOS AND HYDROCARBON INFORMATION

Table A - 1: Credible spill scenario and hydrocarbon information

Scenario	Product	Volume	Residue	Weathering rate	
CS-01 (WCCS) ***Instantaneous surface release of Marine Diesel Oil from a single tank caused by a vessel collision at the Macedon Well Centre***	Marine Diesel (MDO)	125 m^3	5% (6.25 m^3)	12 hours (BP < 180 °C)	6%
				24 hours (180 °C < BP < 265 °C)	35%
				Several days (265 °C < BP < 380 °C)	54%
CS-02 ***Loss of well containment from Macedon-7 well due to loss of Xmas tree and subsurface safety valve ability to emergency close***	Dry gas – no liquid hydrocarbon is expected at atmospheric temperatures.	NA – dry gas	NA – dry gas	NA – dry gas	

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	[4]
3	Harmful Substance Report (POLREP – AMSA)	[10]
4	AMOSC Service Contract	[11]
5	Marine Pollution Report (POLREP – DoT)	[7]
6a	OSRL Initial Notification Form	[12]
6b	OSRL Mobilisation Activation Form	[12]
7	RPS Response Oil Spill Trajectory Modelling Request	[14]
8	Aerial Surveillance Observer Log	Link
9	Tracking buoy deployment instructions	Link

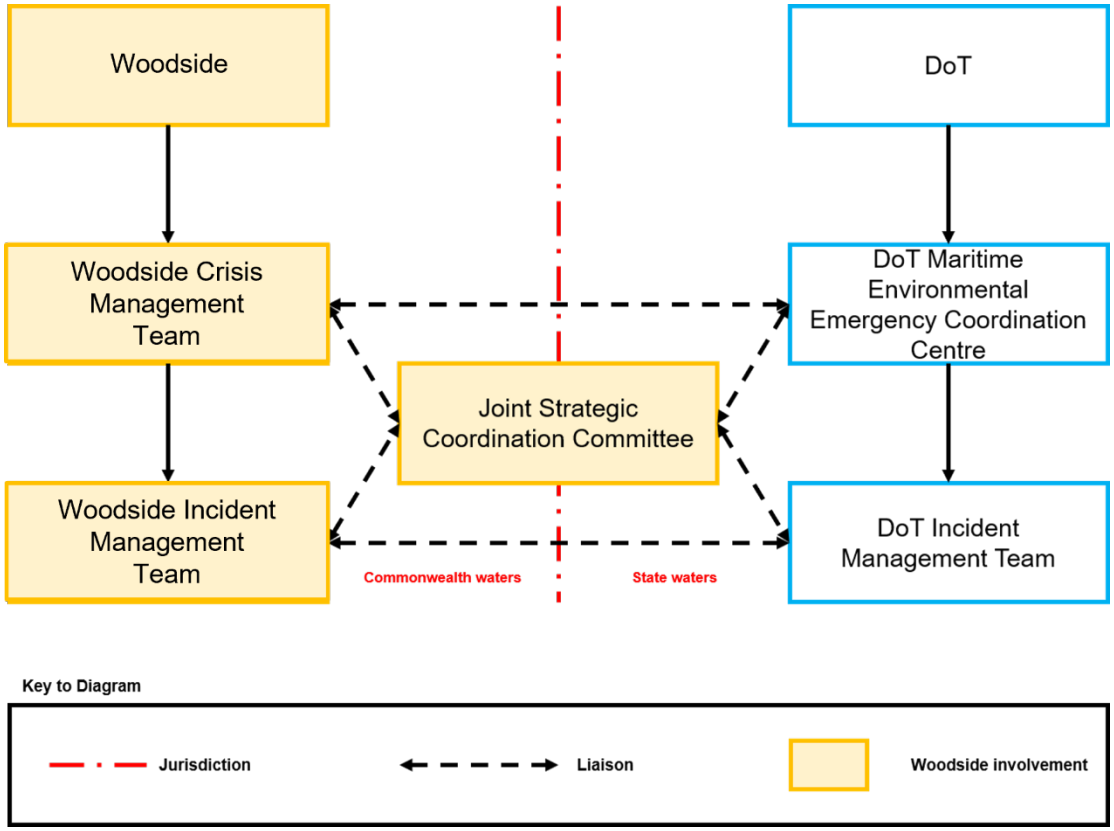
FORM 1 – RECORD OF INITIAL VERBAL NOTIFICATION TO NOPSEMA

NOPSEMA phone: [4]		
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	**[4]**	
NOPTA	**[5]**	
DEMIRS	**[6]**	

APPENDIX C – SPILL ASSESSMENT QUESTIONS

What has happened?		
Date/time		
Spill source		
Spill cause		
Safety situation		
What is it?		
Oil type and name		
Oil properties	Specific gravity	
	Viscosity	
	Pour point	
	Asphaltenes	
	Wax content	
	Boiling point	
Where is it?		
Latitude and longitude		
Distance and bearing		
Affected area	☐ Offshore	
	☐ Subsea	
	☐ Shoreline	
	☐ Estuary	
	☐ Port	
	☐ Harbour	
	☐ Inland	
	☐ River	
	☐ Other (please detail):	
Water depth		
How big is it?		
Area		
Release type	☐ Instantaneous	Estimated volume:
	☐ Continuous release	Estimated release rate:
Where it is going?		
Metocean conditions		
Currents and tides		
What is in the way?		
Resources at risk		
Time until resource contact		
What's happening to it?		
Weathering processes		
Response actions underway		

APPENDIX D – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/ SHORELINES[2]



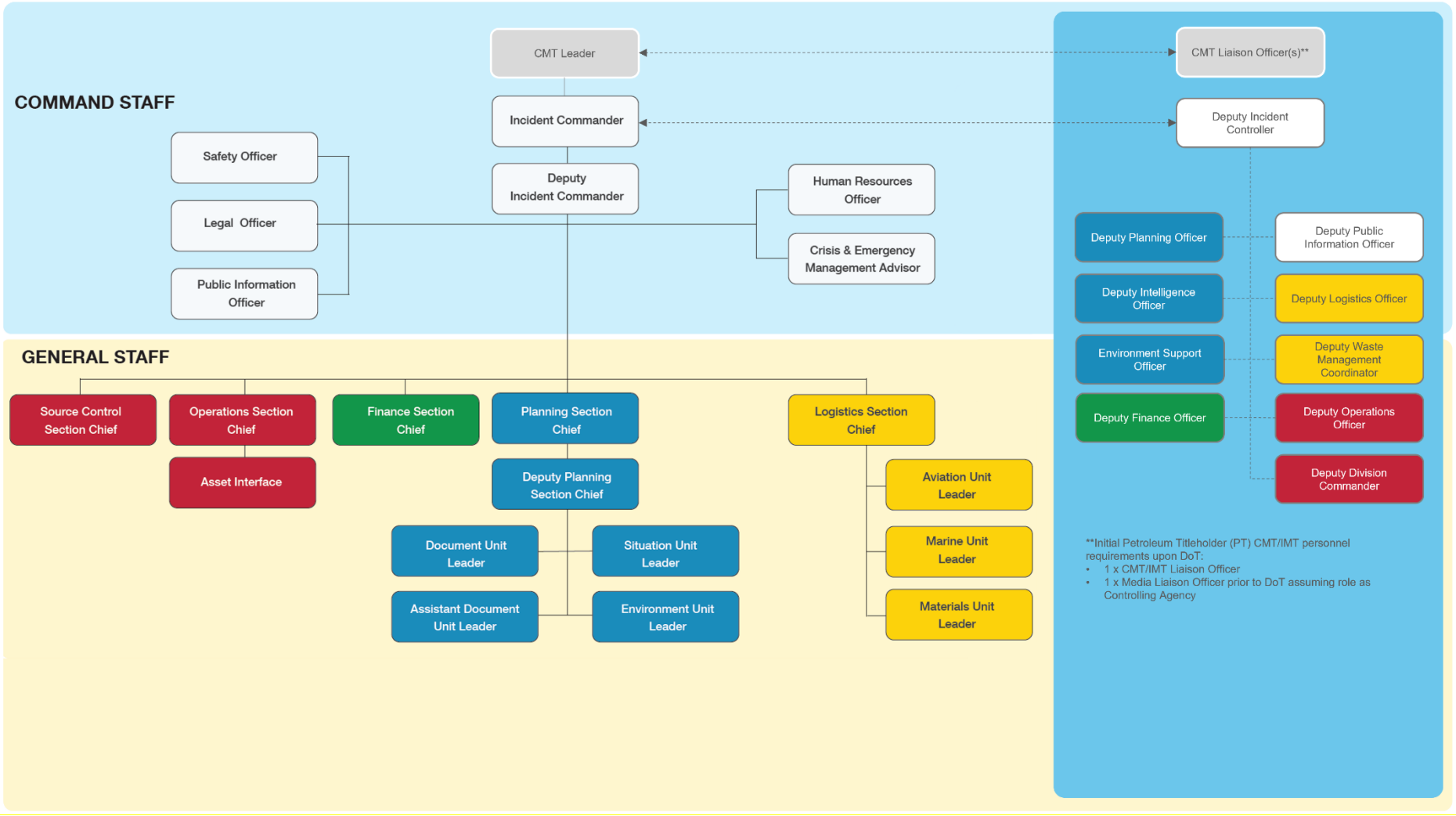
The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder).

The Control Agency/ Hazard Management Agency (HMA) for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity is DoT. DoT will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

[2] Adapted from DoT Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements July 2020. Note: For full structure up to Commonwealth Cabinet/Minister refer to Marine Oil Pollution: Response and Consultation Arrangements Section 6.5, Figure 4.

APPENDIX E – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DoT IMT if required). Woodside's CIMT would operate from the Emergency Operations Centre (EOC) at the Woodside headquarters in Perth.



APPENDIX F – WOODSIDE LIAISON OFFICER RESOURCES TO DOT

In the event that DoT is required to establish an IMT, Woodside will make available an appropriate number of appropriately qualified persons to work within the DoT IMT.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DoT Fremantle ICC as soon as possible after the formal request has been made by the State Marine Pollution Coordinator (SMPC), and that the remaining initial cohort will attend no later than 8 am on the day following the request being formally made to Woodside by the SMPC. For Woodside personnel designated to serve in DoT's Forward Operating Base (FOB), it is expected that they arrive at the FOB no later than 24 hours from the formal request being made by the SMPC.

Area	Role	Woodside personnel[3]	Key Duties	#
DoT Maritime Environmental Emergency Coordination Centre (MEECC)	CMT Liaison Officer	CIMT Liaison	• Provide a direct liaison between the CMT and the MEECC. • Facilitate effective communications and coordination between the CIMT Leader and SMPC. • Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.	1
DoT IMT Incident Control	Deputy Incident Controller	Deputy Incident Commander (Deputy IC)	• Provide a direct liaison between the PT IMT and DoT IMT. • Facilitate effective communications and coordination between the PT IC and the DoT IC. • Offer advice to the DoT IC on matters pertaining to PT incident response policies and procedures. • Offer advice to the Safety Coordinator on matters pertaining to PT safety policies and procedures, particularly as they relate to PT employees or contractors operating under the control of the DoT IMT.	1
DoT IMT Intelligence	Deputy Intelligence Officer	Situation Unit Leader (Intelligence)	• As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. • Facilitate the provision of relevant modelling and predications from the PT IMT. • Assist in the interpretation of modelling and predictions originating from the PT IMT. • Facilitate the provision of relevant situation and awareness information originating from the DoT IMT to the PT IMT.	1

[3] *These positions would be mobilised, in consultation with DoT, to align to the actual spill scenario. The selected roles and/or individual personnel would be subject to continued evaluation to ensure continued 'best fit'. For CIMT roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through internal resourcing and mutual Aid agreements such as the AMOSC Core Group via [11].*

Area	Role	Woodside personnel[3]	Key Duties	#
			• Facilitate the provision of relevant mapping from the PT IMT. • Assist in the interpretation of mapping originating from the PT IMT. • Facilitate the provision of relevant mapping originating from the DoT IMT to the PT IMT.	
DoT IMT Intelligence – Environment	Environment Support Officer	Deputy Environment Unit Leader	• As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process. • Assist in the interpretation of the PT OPEP and relevant TRP plans. • Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT. • Facilitate the provision of relevant environmental information and advice originating from the DoT IMT to the PT IMT.	1
DoT IMT Planning-Plans/ Resources	Deputy Planning Officer	Deputy Planning Section Chief	• As part of the Planning Team, assist the Planning Officer in the performance of their duties in relation to the interpretation of existing response plans and the development of incident action plans and related sub plans. • Facilitate the provision of relevant IAP and sub plans from the PT IMT. • Assist in the interpretation of the PT OPEP from the PT. • Assist in the interpretation of the PT IAP and sub plans from the PT IMT. • Facilitate the provision of relevant IAP and sub plans originating from the DoT IMT to the PT IMT. • Assist in the interpretation of the PT existing resource plans. • Facilitate the provision of relevant components of the resource sub plan originating from the DoT IMT to the PT IMT. **(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)**	1
DoT IMT Public Information-Media/ Community Engagement	Deputy Public Information Officer	Deputy Public Information Officer	• As part of the Public Information Team, provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DoT Information and Warnings team.	1

Area	Role	Woodside personnel[3]	Key Duties	#
			• Offer advice to the DoT Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DoT Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DoT Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. • Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.	
DoT IMT Logistics	Deputy Logistic Officer	Deputy Logistics Section Chief	• As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. • Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements. • Collects Request Forms from DoT to action via PT IMT. **(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)**	1
DoT IMT Finance-Accounts/ Financial Monitoring	Deputy Finance Officer	Deputy Finance Section Chief	• As part of the Finance Team, assist the Finance Officer in the performance of their duties in relation to the setting up and payment of accounts for those services acquired through the PTs existing OSRL, AMOSC and private contract arrangements. • Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response. • Assist the Finance Officer in the tracking of financial commitments through the response, including the supply contracts commissioned directly by DoT and to be charged back to the PT.	1
DoT IMT Operations	Deputy Operations Officer	Deputy Operations Section Chief	• As part of the Operations Team, assist the Operations Officer in the performance of their duties in relation to the implementation and management of operational activities undertaken to resolve an incident. • Facilitate effective communications and coordination between the PT Operations Section and the DoT Operations Section. • Offer advice to the DoT Operations Officer on matters pertaining to PT incident response procedures and requirements.	1

Area	Role	Woodside personnel[3]	Key Duties	#
			• Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DoT response efforts.	
DoT IMT Operations – Waste Management	Deputy Waste Management Coordinator	Deputy Waste Coordinator (Materials)	• As part of the Operations Team, assist the Waste Management Coordinator in the performance of their duties in relation to the provision of the management and disposal of waste collected in State waters. • Facilitate the disposal of waste through the PT's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements. • Collects Request Forms from DoT to action via PT IMT.	1
DoT FOB Operations Command	Deputy Division Commander	FOB Deputy Incident Commander	• As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. • Provide a direct liaison between the PT FOB and DoT FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DoT Division Commander. • Offer advice to the DoT Division Commander on matters pertaining to PT incident response policies and procedures. • Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors. • Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.	1
			Total	11

APPENDIX G – DOT LIAISON OFFICER RESOURCES TO WOODSIDE

Once DoT activates a State waters/shorelines IMT, DoT will make available the following roles to Woodside.

Area	DoT Liaison Role	Personnel Sourced from:	Key Duties	#
Woodside CIMT	DoT Liaison Officer (prior to DoT assuming Controlling Agency)/ Deputy Incident Controller – State waters (after DoT assumes Controlling Agency)	DoT	• Facilitate effective communications between DoT's SMPC/ Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. • Provide enhanced situational awareness to DoT of the incident and the potential impact on State waters. • Assist in the provision of support from DoT to the Petroleum Titleholder PT. • Facilitate the provision technical advice from DoT to the Petroleum Titleholder Incident Controller as required.	1
Woodside CIMT Public Information – Media	DoT Media Liaison Officer	DoT	• Provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DoT Information & Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures.	1
			Total DoT personnel initial requirement to Woodside	2

24. APPENDIX J WOODSIDE CLIMATE CHANGE POLICY

WOODSIDE POLICY

Woodside Energy

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.

Title: Climate Policy

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 2023.

25. APPENDIX K MASTER EXISTING ENVIRONMENT

Description of the Existing Environment

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1. INTRODUCTION

1.1 Purpose

This document applies, where indicated in the relevant Environment Plan (EP), to Woodside Energy Ltd. (Woodside) activities and operations.

1.2 Scope

This document describes the existing environment within the Woodside areas of activity located in Commonwealth waters off north-western Western Australia (WA), with a focus on the North-west Marine Region (NWMR) (

Figure 1-1). This document includes details of the particular and relevant values and sensitivities of the environment as required by the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) (OPGGS (E) Regulations) to inform the impact and risk evaluation of Woodside's activities within the NWMR. Furthermore, the key values of the South-west Marine Region (SWMR) and the North Marine Region (NMR) are summarised to encompass areas outside the NWMR. This is with reference to the environment that may be affected (EMBA), as defined and described in individual EPs, for unplanned hydrocarbon spill risks. Additional information appropriate to the nature and scale of the impacts and risks of activities that may interact with the environment will be used to further inform impact and risk assessments and be included in the Description of the Existing Environment of individual EPs.

This document is informed by a variety of resources that includes: a search of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) for the marine bioregions (NWMR, SWMR and NMR) and the three PMST reports provided in **APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and** NMR; State (WA)/ Commonwealth Marine Park Management Plans, the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) Species Profile and Threats Database (SPRAT), EPBC Act Part 13 statutory instruments (recovery plans, conservation advices and wildlife conservation plans for listed threatened and migratory species); and peer reviewed scientific publications, as well as Woodside and Joint Venture (JV) funded studies and other titleholder funded study findings available in the public domain.

1.3 Review and Revision

The information presented in this document is reviewed and updated on at least a 5-year basis. Key updates are captured in a 'change register'. Material risk may trigger updates within the 5-year review period, as per the OPGGS (E) Regulations. Key updates may include but are not limited to the status of EPBC Act listed species, Part 13 Instruments, policies and guidelines, key advice from external stakeholders and recently published scientific literature.

1.4 Regional Context

Where relevant, the physical, biological and social environments within the areas of interest are discussed with reference to the three marine bioregions of Australia—North-west marine region (NWMR), South-west marine region (SWMR)and North marine region (NMR), the Marine Bioregional Plans has been prepared under section 176 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)[1] (**Table 1-1)**. The NWMR is the focal marine bioregion for the Woodside Description of the Existing Environment as this is currently the location of most of Woodside's activities.

[1] https://www.dcceew.gov.au/environment/marine/marine-bioregional-plans (accessed:04/08/2024)

Table 1-1. Description of the Marine Bioregions

Marine Bioregion	Description
North-west (DSEWPAC, 2012a)	The NWMR includes all Commonwealth waters (from 3 nautical mile (nm) from the Territorial Sea Baseline (TSB) to the 200 nm Exclusive Economic Zone (EEZ) boundary) extending from the WA/Northern Territory border to Kalbarri, south of Shark Bay in WA, covering an area of approximately 1.07 million km^2 and includes extensive areas of shallower waters on the continental shelf, as well as deep areas of abyssal plain where water depths are 5000 m or greater.
South-west (DSEWPAC, 2012b)	The SWMR comprises Commonwealth waters from the eastern end of Kangaroo Island in South Australia to Shark Bay in WA. The region spans approximately 1.3 million km^2 of temperate and subtropical waters and abuts the coastal waters of SA and WA.
North (DSEWPAC, 2012c)	The NMR comprises Commonwealth waters from West Cape York Peninsula to the NT/WA border). The region covers approximately 625,689 km^2 of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas, and abuts the coastal waters of Queensland and the NT.

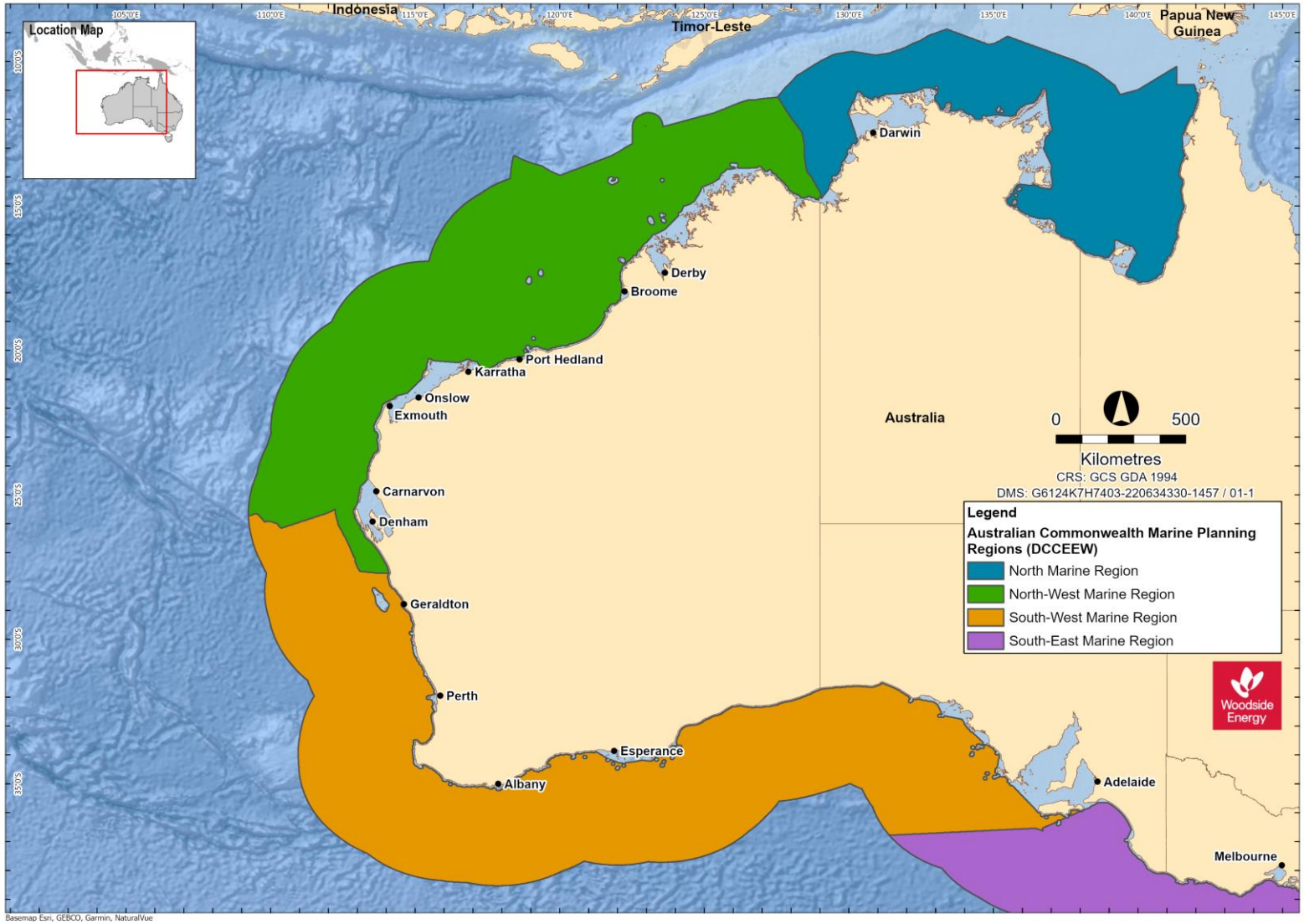


Figure 1-1. Marine Bioregions: North-west (NWMR), South-west (SWMR), North (NMR) and South-East (as defined under the EPBC Act, refer to (DCCEEW, 2021b).

2. PHYSICAL ENVIRONMENT

2.1 Regional Context

The key physical characteristics of the NWMR, SWMR and NMR are presented in **Table 2-1**. The remainder of this section then focuses entirely on the NWMR.

Table 2-1 Key physical characteristics of the NWMR, SWMR and NMR

Bioregion	Key Characteristics
North-west Marine Region	The NWMR experiences a tropical monsoonal climate towards the northern extent of the region, transitioning to tropical arid and subtropical arid within the central and southern areas of the region (DSEWPAC, 2012a).
	The NWMR is part of the Indo-Australian Basin, the ocean region between the north-west coast of Australia and the Indonesian islands of Java and Sumatra. Dominant currents in the Region include: the South Equatorial Current, the Indonesian Throughflow; the Eastern Gyral Current, and the Leeuwin Current (DEWHA, 2007a).
	The seafloor of the NWMR consists of four general feature types: continental shelf; continental slope; continental rise; and abyssal plain and is distinguished by a range of topographic features including canyons, plateaus, terraces, ridges, reefs, and banks and shoals.
South-west Marine Region	The SWMR contains both subtropical and temperate climates, with overall light climatic cycles.
	The SWMR experiences complex and unusual oceanographic patterns, driven largely by the Leeuwin Current and its associated currents that have a significant influence on biodiversity distribution and abundance.
	The major seafloor features of the SWMR include a narrow continental shelf on the West coast to the waters off South-west WA, and a wide continental shelf dominated by sandy carbonate sediments of marine origin in the Great Australian Bight. The region also contains a steep, muddy continental slope, many canyons and large tracts of abyssal plains (DSEWPAC, 2012b).
North Marine Region	The NMR experiences a tropical monsoonal climate with complex weather cycles, including high temperatures and heavy seasonal yet variable rainfall and cyclones, which can be both destructive (loss of seagrass and mangroves) and constructive (mobilisation of sediment into coastal habitats).
	The NMR comprises Commonwealth waters from West Cape York Peninsula to the NT–WA border, covering tropical waters in the Gulf of Carpentaria and Arafura and Timor seas. Currents in the NMR are driven largely by strong winds and tides, with only minor influences from oceanographic currents such as the Indonesian Throughflow and the South Equatorial Current (DSEWPAC, 2012c).
	The seafloor of the NMR consists mainly of a wide continental shelf, as well as other geomorphological features such as shoals, banks, terraces, valleys, shallow canyons and limestone pinnacles.

2.2 Marine Systems of the North-west Marine Region.

The NWMR is divided into three large scale ecological marine systems on the basis of the influence of major ocean currents, seafloor features and eco-physical processes (e.g. climate, tides, freshwater inflow) upon the Region (DSEWPAC, 2012a). The three large scale marine systems approximate the Woodside activity areas within the NWMR (**Figure 2-1**). The key characteristics of each marine system are outlined in **Table 2-2**.

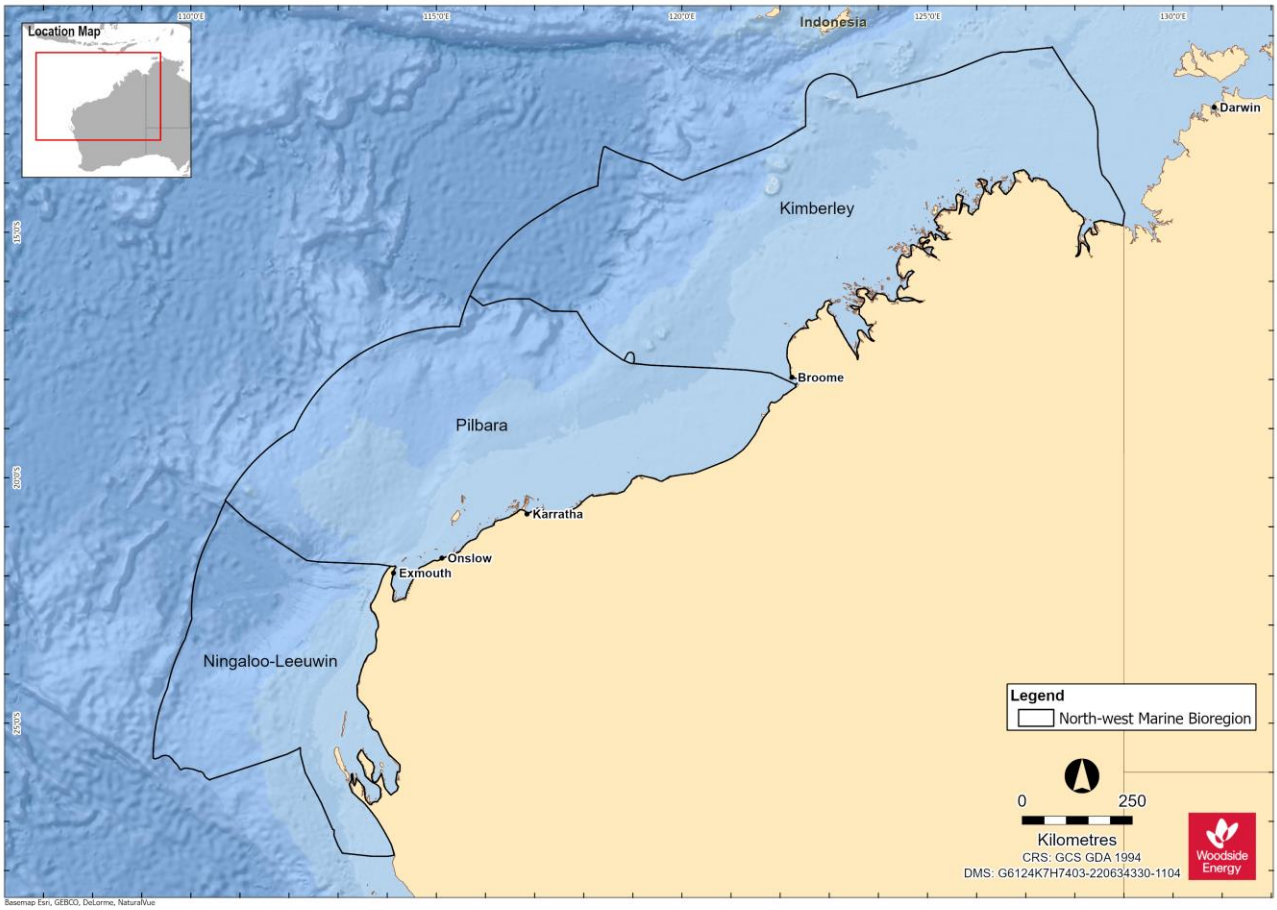


Figure 2-1. The marine systems of the North-west Marine Region (NWMR) (data source: DEWHA 2007a)

Table 2-2. Key characteristics of the Marine Systems of the NWMR

Note: Woodside areas align with the marine systems as described in DEWHA (2007a)

Marine System	Woodside Activity Area	Key Characteristics
Kimberley	Browse	Tropical monsoonal climate Strong influence from Indonesian Throughflow Predominantly tropical Indo-Pacific species Subject to episodic offshore cyclonic activity, rarely crossing the coast Large tidal regimes Freshwater input from terrestrial monsoonal run-off Turbid coastal waters (i.e. light limited systems) Dominated by shelf environments Predominantly hard substrates in inner to mid-shelf environments Includes a number of shelf-edge atolls (i.e. Scott Reef, Rowley Shoals)
Pilbara	North-west Shelf (NWS) / Scarborough	Tropical arid climate Transition between Indonesian Throughflow and Leeuwin Current dominated areas Predominantly tropical species High cyclone activity with frequent crossing of the coast Transitional tidal zone Internal tide activity Large areas of shelf and slope Dry coast with ephemeral freshwater inputs
Ningaloo-Leeuwin	North-west Cape	Subtropical arid climate Leeuwin Current consolidates Transitional tropical/temperate faunal area Higher water clarity in near-shore and offshore environments Narrow shelf and slope Marginal tidal range Seasonal wind forcing more dominant influence on marine environment

2.3 Meteorology and Oceanography

This section describes the general meteorological conditions and oceanography for the NWMR and provides further detail for the three Woodside activity areas (**Table 2-3**). The NWMR is influenced by a complex system of ocean currents that change between seasons and between years, which generally result in its surface waters being warm and nutrient-poor, and of low salinity (DEWHA, 2007a). The mix of bathymetric features, complex topography and oceanography across the whole North-west marine environment has created and supports a globally important marine biodiversity hotspot (Wilson, 2013). The purpose of **Table 2-3** is to provide high-level physical characteristics of the marine environment within and across the NWMR. This subsection does not describe warming trends or discuss forecast trajectories for the NWMR.

Table 2-3 NWMR climate and oceanography summary

Receptor	Description
Meteorology	
Seasonal patterns	The NWMR associated land mass of the Australian continent is characterised as a hot and humid summer climate zone. The broader NWMR experiences variations of a tropical or monsoon climate. In the far North-west (Kimberley), there is a hot summer season from December to March and a milder winter season between April and November. The Pilbara area is described as having a tropical arid climate with high cyclone activity (DEWHA, 2007a). The Pilbara and North-west Cape has a hot summer season from October to April and a milder winter season between May and September with transition periods between the summer and winter regimes.
Air temperature and rainfall	In summer (between September and March), maximum daily temperatures range from 18ºC to 36ºC. During winter (May to July), mean daily temperatures range from 12ºC to 30ºC (BOM, 2023c), refer to **Figure 2-2a** and **b**. Rainfall in the region typically occurs during the summer, with highest falls observed late in the season. This is often associated with the passage of tropical low-pressure systems and cyclones.
Wind	Wind patterns in North-west WA are dictated by the seasonal movement of atmospheric pressure systems. During summer, high-pressure cells produce prevailing winds from the North-west and South-west, which vary between 10 and 13 ms^{-1}. During winter, high-pressure cells over central Australia produce North-easterly to South-easterly winds with average speeds of between 6 and 8 ms^{-1}. Refer to **Figure 2-3** and **b**.
Tropical cyclones	The NWS and Pilbara coast (within the NWMR) experiences more cyclonic activity than any other region of the Australian mainland coast (BOM, 2021a). Tropical cyclone activity typically occurs between November and April and is most frequent in the region during December to March (i.e. considered the peak period), with an average of about one cyclone per month (BOM, 2021a). Refer to **Figure 2-4**.
Oceanography	
Ocean temperature	Waters in NWMR are tropical year-round, with sea surface temperature in open shelf waters reaching ~26°C in summer and dropping to ~22°C in winter. Nearshore temperatures (as recorded for the NWS area) fluctuate more widely on an annual basis from ~<23°C in winter to ~31°C in summer (Hallenberger et al. 2022), indicative of present-day sea surface temperatures, acquired from the CISRO Oceans and Atmosphere database. Refer to **Figure 2-5a** and **b,** for the seasonal variation across and within the NWMR.
Currents	The major surface currents influencing North-west WA flow towards the poles and include the Indonesian Throughflow, the Leeuwin Current, the South Equatorial Current, and the Eastern Gyral Current. The Ningaloo Current, the Holloway Current, the Shark Bay Outflow, and the Capes Current are seasonal surface currents in the region. Below these surface currents are several subsurface currents, the most important of which are the Leeuwin Undercurrent and the West Australian Current. These subsurface currents flow towards the equator in the opposite direction to surface currents (DEWHA, 2007a). Refer to **Figure 2-6**. The offshore waters of the NWMR are characterised by surface and subsurface boundary currents that flow along the continental shelf/slope and are enhanced through inflows from the ocean basins and are an important conduit for the poleward heat and mass transport along the West coast (Wijeratne et al., 2018). Local physical oceanography is strongly influenced by the large-scale water movements of the Indonesian Throughflow (Liu et al. 2015; Sutton et al. 2019). Typically, a warm and well-mixed oligotrophic surface layer, and a cooler and more nutrient rich deeper water layer (Menezes et al. 2013).
Waves	Sea surface waves within the NWMR generally reflect the direction of the synoptic winds and flow predominately from the South-west in the summer and East in winter (Pearce et al., 2003). The NWS within the NWMR is a known area of internal wave generation. Both internal tides and internal waves are thought to be more prevalent during summer months due to the increased stratification of the water column (DEWHA, 2007a). Along the continental slope of the NWMR, strong internal waves and interaction between semi-diurnal tidal currents and seabed topographic features facilitates upwelling events and localised productivity events (Holloway, 2001).
Tides	Tides on the NWS (NWMR) increase as the water moves from deep towards the shallower coast. The highest offshore tides are experienced at the border of the Browse and Canning basins. The smallest tides are experienced at the Exmouth Plateau, near the coast. Tides of the NWS (NWMR) are predominantly semi-diurnal (two highs and two lows each day), but with increasing importance of the diurnal (once per day) inequality at the southern and northern extremities of the NWS.

Receptor	Description
	The tide range—represented by the Mean Spring Range (MSR)—increases northwards along the coast from 1.4 m at North-west Cape (Point Murat) to 7.7 m at Broome, before decreasing again (apart from local amplification in King Sound and Collier Bay) to about 5 m off Cape Londonderry. The MSR then increases again through Joseph Bonaparte Gulf and on up 5.5 m at Darwin (RPS, 2016).

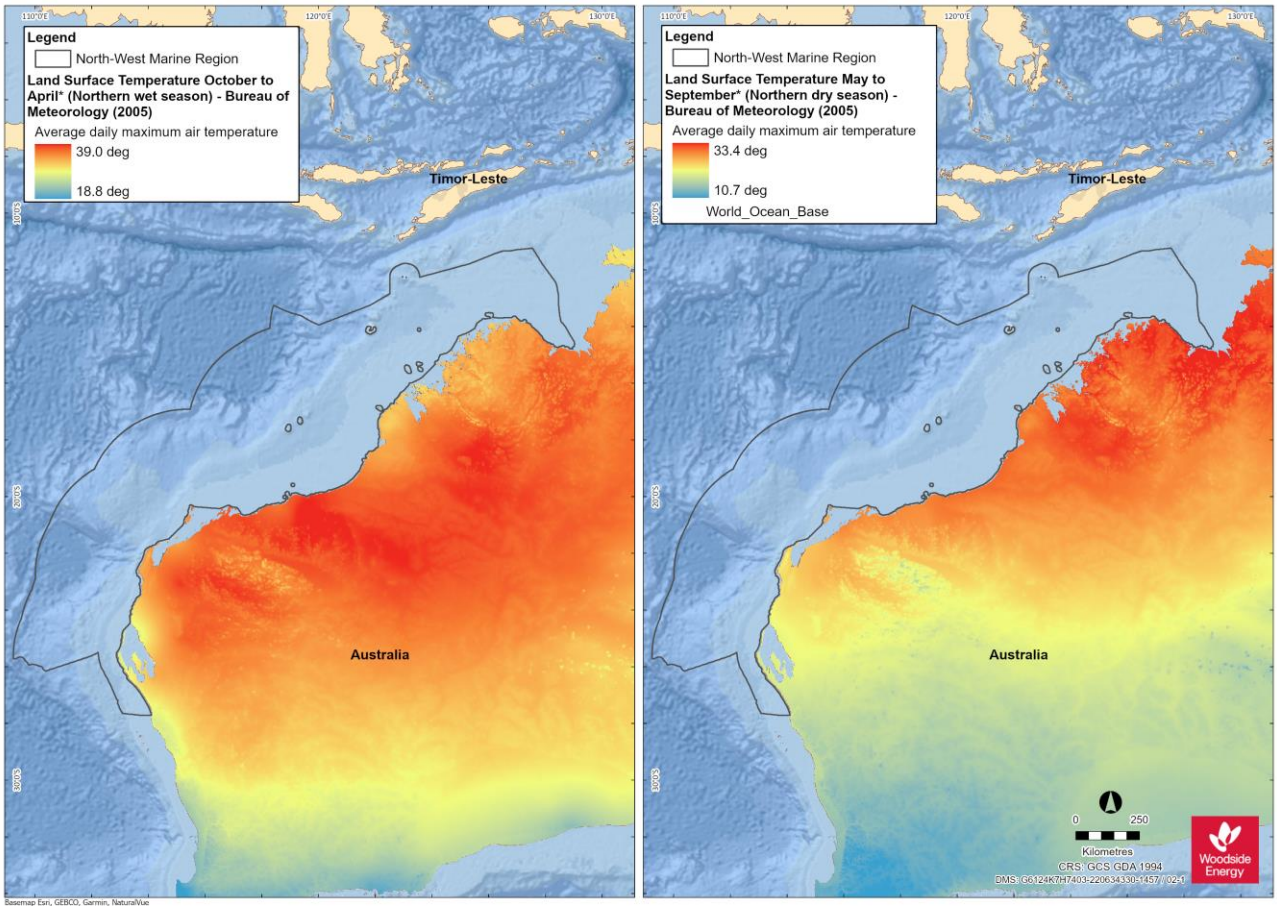


Figure 2-2. Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

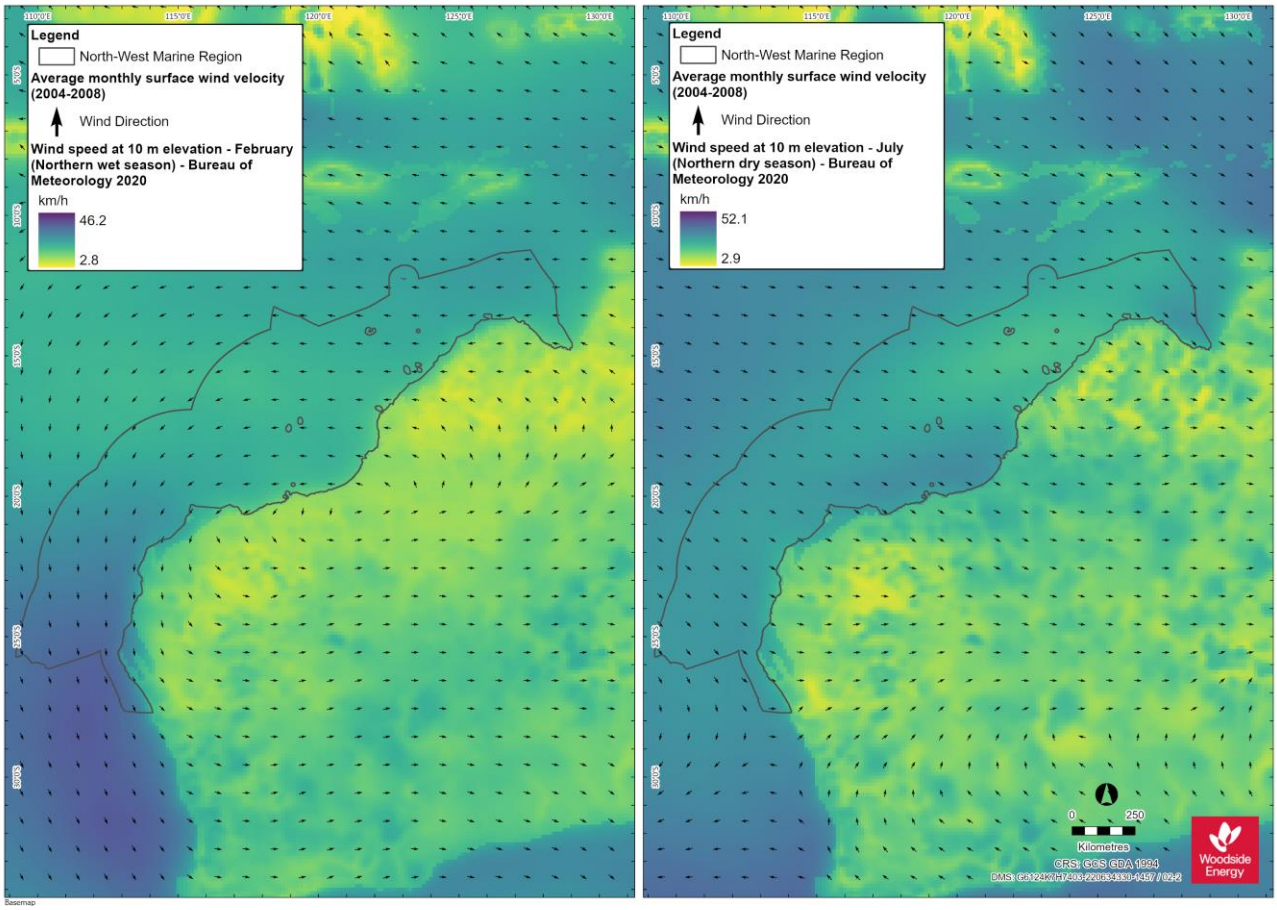


Figure 2-3. Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

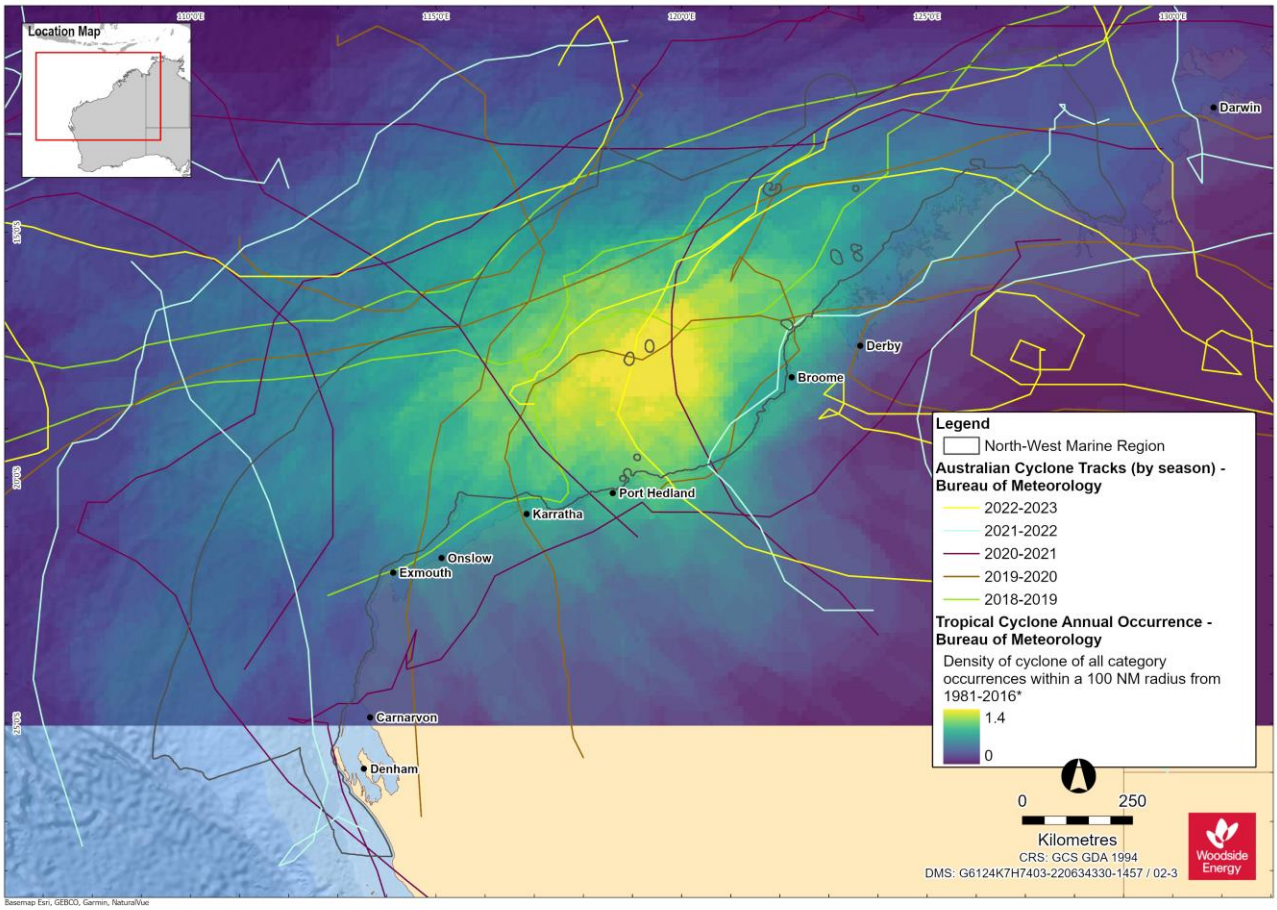


Figure 2-4. Tropical cyclone annual occurrence and cyclone tracks for NWMR

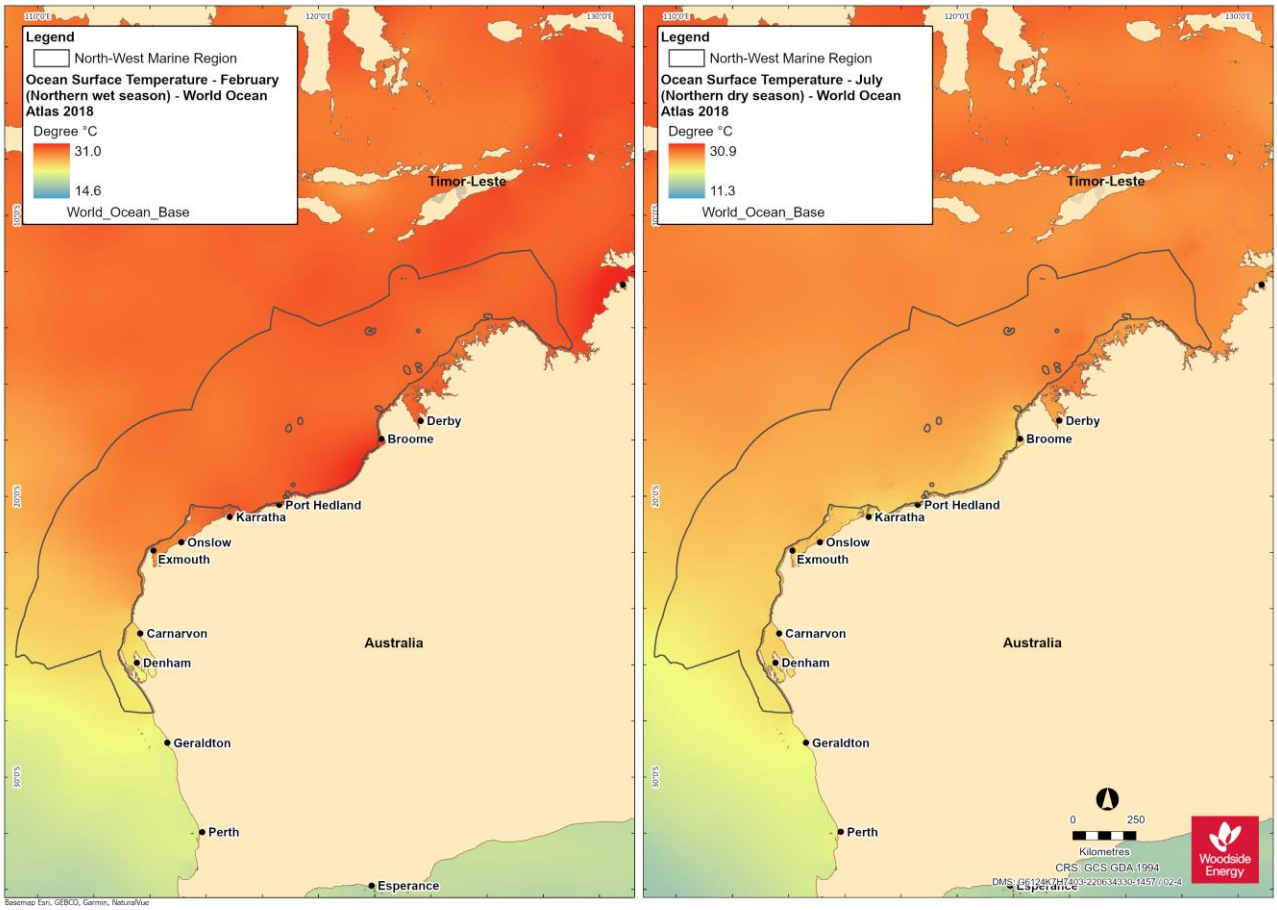


Figure 2-5. Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season) (data source: Locarnini et al**. 2018 in World Ocean Atlas 2018)**

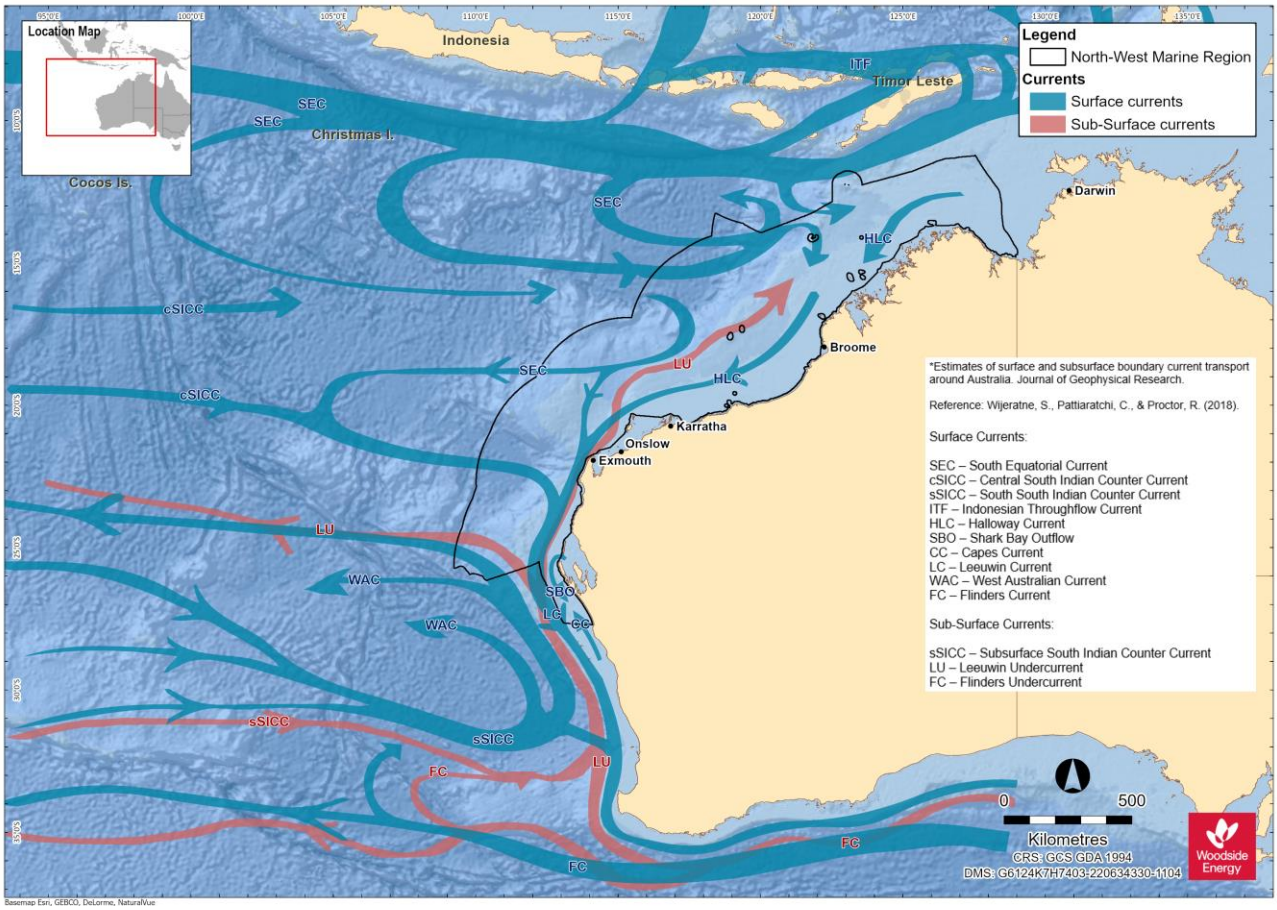


Figure 2-6. Ocean surface and sub-surface currents of the NWMR and wider region (data source: adopted from Wijeratne et al**. 2018)**

2.3.1 Browse

Table 2-4 Summary meteorology and oceanography for Browse (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures and data sources)

Receptor	Description
Meteorology	
Seasonal patterns	The Browse area overlapping the Kimberley marine system experiences tropical monsoon climate with two distinct seasons: the wet season from December to March and dry season from April to November.
Air temperature	The mean annual air temperature recorded at Troughton Island between 2010 and 2020 ranged from 22.5ºC in 2019 to 32.8ºC in 2016 and highest mean monthly air temperatures were recorded for the months of November and December (BOM, 2023a).
Rainfall	Rainfall recorded from Troughton Island in the Browse basin ranged from barely detectable (<1 mm) mean monthly level to >100 mm in December to March, with the highest rainfall recorded for January (reflecting the wet monsoon season of the Kimberley marine system) (BOM, 2023a).
Wind	The dry season experiences high-pressure systems that bring East to South-easterly winds with average wind speeds during the season of approximately 16.6 km/h and maximum wind gusts of 65 km/h. In contrast the wet season brings predominately westerly winds with average wind speeds approximately 17 km/h and maximum gusts exceeding 100 km/h (generally associated with tropical cyclones (MetOcean Engineers, 2005).
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the South-west during March to June and more variable outside this period (Woodside, 2019). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.3.2 North West Shelf / Scarborough

Table 2-5 Summary meteorology and oceanography for the North West Shelf and Scarborough (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures and data sources)

Receptor	Description
Meteorology	
Seasonal patterns	The NWS and Scarborough areas experience the monsoonal climate of the wider NWMR with a distinct wet and dry seasonal regime and transitions periods between seasons.
Air temperature	Air temperatures as measured at the North Rankin A platform on the NWS ranged from a maximum average of 39.8ºC in summer to a minimum average temperature of 15.2ºC in winter (Woodside, 2015).
Rainfall	Rainfall patterns annually reveal the wet season with highest rainfalls during the late summer, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall in the dry season is typically extremely low (Pearce et al. 2003) and **Appendix B**.
Wind	Winds are typically from the southwest during the wet season (summer) and tending from the South-east during the dry season (winter). The summer South-westerly winds are driven by high pressure cells that pass from West to East over the Australian continent. During the winter period, the relative position of the high-pressure cells shifts further North, leading to prevailing South-easterly winds from the mainland (Pearce et al. 2003) and **Appendix B**.
Oceanography	
Currents	The large-scale ocean currents of the NWMR, primarily the Indonesian Throughflow and Leeuwin Current (and Holloway Current), are the primary influence on the NWS and Scarborough areas. The Indonesian Throughflow and Leeuwin Current are strongest during the late summer and winter and flow reversals to the North-east, typically short-lived and weak when there are strong South-westerly winds, can generate localised upwelling on the shelf edge (Holloway and Nye, 1985; James et al. 2004 and Condie et al. 2006).

2.3.3 North-west Cape

Table 2-6 Summary meteorology and oceanography for the North-west Cape (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The climate of the NWMR is dry tropical exhibiting a hot summer season and a mild winter season. There are often distinct transition periods between the summer and winter regimes, characterised by periods of relatively low winds.
Air temperature	Air temperatures in the North-west Cape area range from high summer temperatures (maximum average of 38ºC) and mild winter temperatures (minimum average of 11.5ºC) as recorded from the Learmonth Airport (BOM, 2023b).
Rainfall	Rainfall typically occurs during the summer, with highest rainfall during later summer and autumn (mean monthly level to >19 mm), with the highest rainfall recorded during June, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall is typically low in winter (<2 mm) (BOM, 2023b).
Wind	Winds vary seasonally, generally from the South-west quadrant during summer months and the south, south-east quadrant during the autumn and winter months. The summer south-westerly winds are driven by high pressure cells that pass from West to East over the Australian continent. Winds typically weaken and are more variable during the transitional period between the summer and winter seasons, generally between April to August.
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the South-west during March to June and more variable outside this period (Woodside, 2022). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.4 Physical Environment of NWMR

Based on the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4.0, there are eight provincial bioregions that occur within the NWMR, which are based on patterns of demersal fish diversity, benthic habitat and oceanographic data (Commonwealth of Australia, 2006), **Figure 2-7**. Of the eight provincial bioregions that occur within the NWMR, these include four offshore (~65% of total NWMR area) and four shelf (~35% of total NWMR area) bioregions (Baker et al*.,* 2008).

The NWMR is a tropical carbonate margin that comprises an extensive area of shelf, slope and abyssal plain/deep ocean floor, as well as complex areas of bathymetry such as plateau, terraces and major canyons (Harris et al*.*, 2005). A series of reefs are located on the outer shelf/slope of the NWMR, including Ashmore, Cartier, Scott and Seringapatam reefs (Baker et al., 2008). The distribution of seafloor geomorphic features has been systematically mapped over much of the Australian margin and adjacent seafloor. The mapped area can be divided into 10 geomorphic regions, of which the NWMR overlays two; the Western Margin and Northern Margin (Harris et al*.*, 2005). Most of the region consists of either continental slope (61%) or continental shelf (28%) (DEWHA, 2007a) with more than 40% of the NWMR having a water depth less than 200 m. The shallow shelf is contrasted by features such as the Cuvier and Argo abyssal plains, which reach depths of more than five km. A unique feature of the region is the significant narrowing of the continental shelf around North-west Cape (approximately 7 km wide) from the broad continental shelf in the north of the region (approximately 400 km wide at Joseph Bonaparte Gulf) (DEWHA, 2007a), **Figure 2-8.**

The geological history of the region, as well as its geomorphology and oceanography, has influenced the composition and distribution of sediments (DEWHA, 2007a). The sedimentology of the NWMR is dominated by marine carbonates, which show a broad zoning and fining with water depth. Main trends of the NWMR sediments include a tropical carbonate shelf that is dominated by sand and gravel, an outer shelf/slope zone that is dominated by mud and a relatively homogenous rise and abyssal plain/deep ocean floor that is dominated by non-carbonate mud (Baker et al., 2008), **Figure 2-9**.

The distribution and resuspension of sediments on the inner shelf is strongly influenced by the strength of tides across the continental shelf as well as episodic events such as cyclones. Further offshore, on the mid to outer shelf and on the slope itself, sediment movement is primarily influenced by ocean currents and internal tides (DEWHA, 2007a).

This variation in bathymetry and interactions with oceanographic processes provides a diversity of habitats to marine fauna and flora within the NWMR.

2.5 Air quality

The ambient air quality of all three marine regions is largely unpolluted due to the extent of the open ocean area, the activities currently carried out in each and the relative remoteness of each region.

Vessel traffic and existing offshore surface infrastructure are the only likely sources of pollutants in the marine region. Closer to the coast there may be localised and temporary reductions in air quality around areas of high vessel traffic, or due to the occurrence of dust storms and bushfires. International contributors to reduced air quality in the marine region may include ‘slash-and-burn’ agricultural methods and large forest fires in South-east Asian regions (Vadrevu et al. 2014; Kim Oanh et al. 2018).

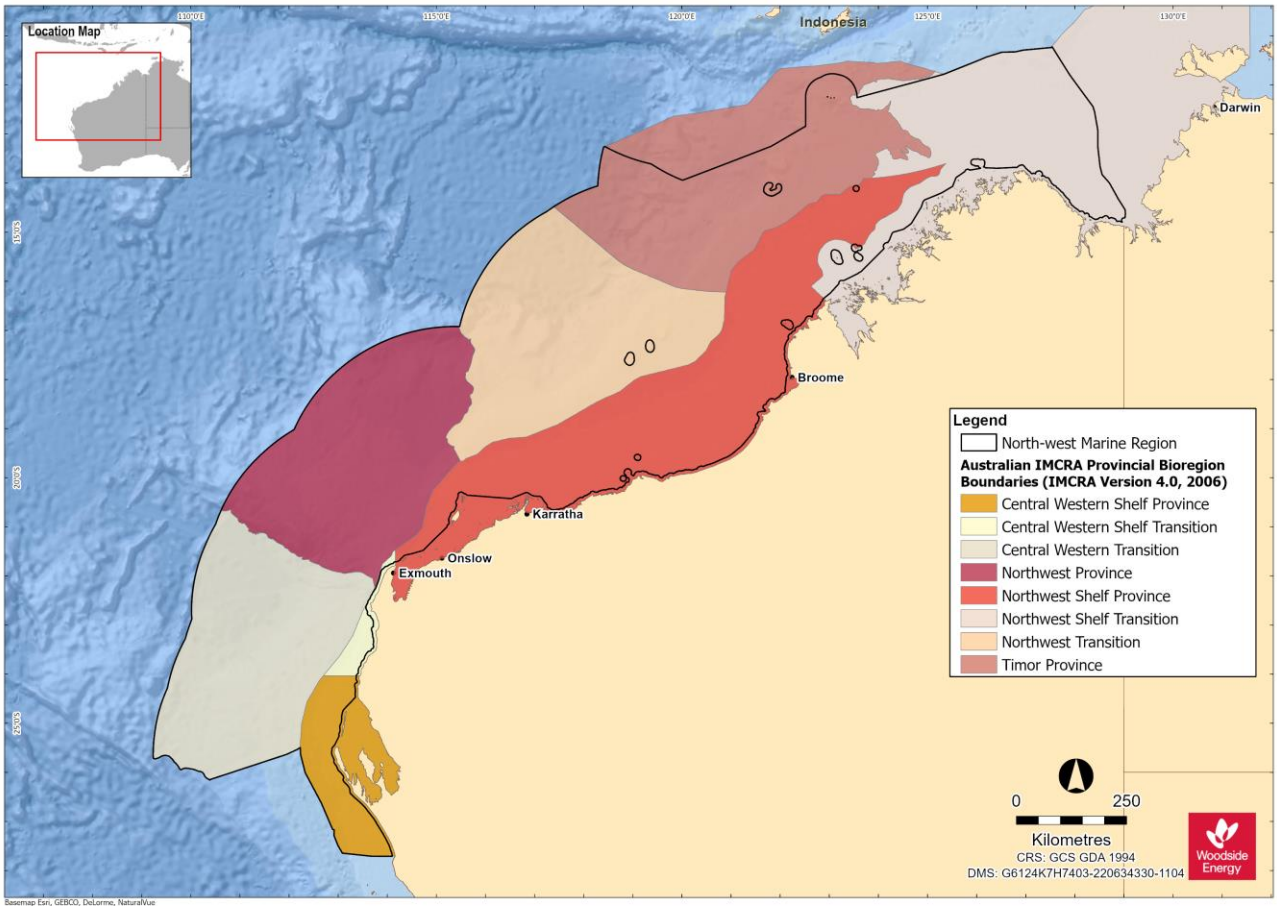


Figure 2-7. The eight Integrated Marine and Coastal Regionalisation of Australia (IMCRA) v4.0 provincial bioregions of the NWMR (GA, 2024)

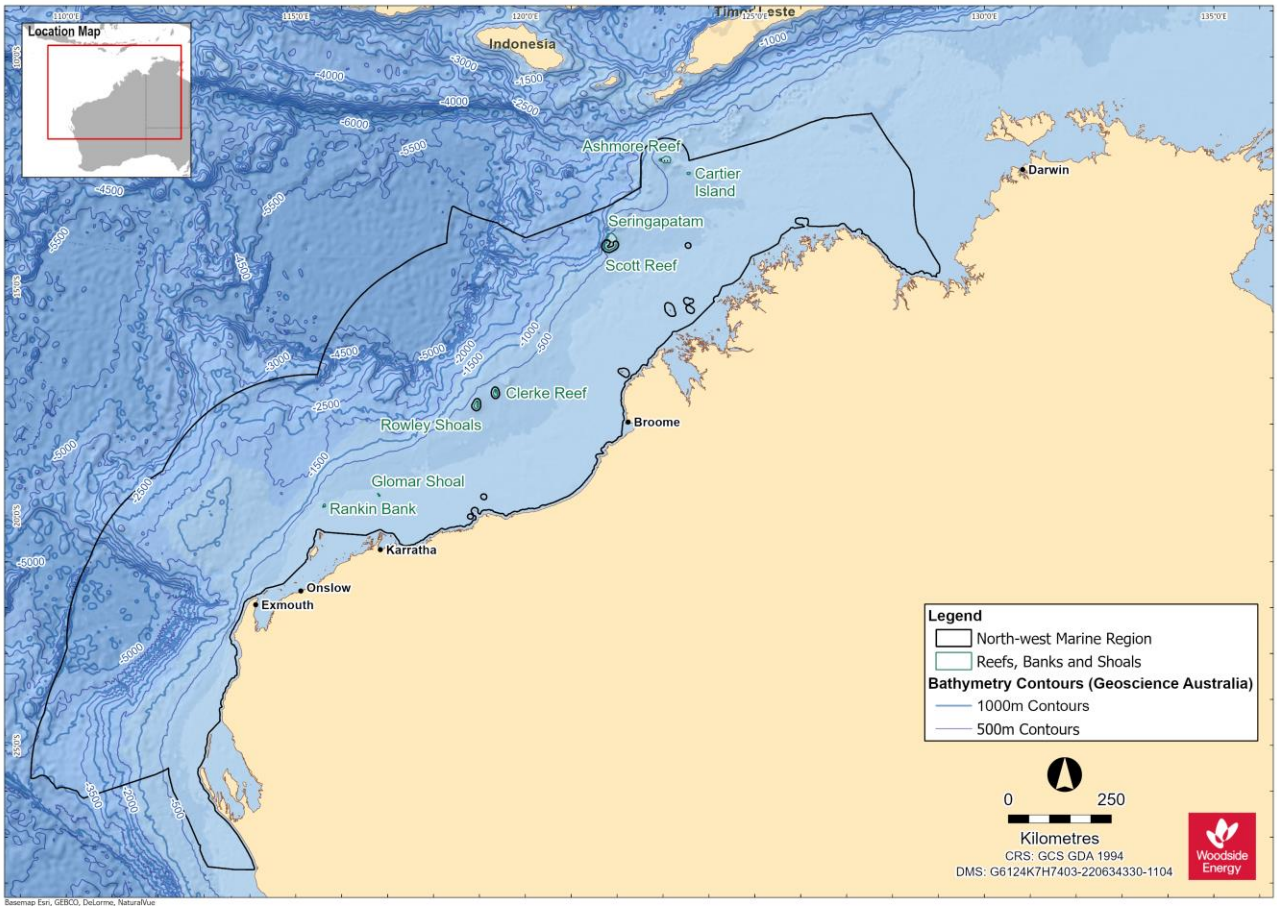


Figure 2-8. Bathymetry of the NWMR (data source: Geoscience Australia)

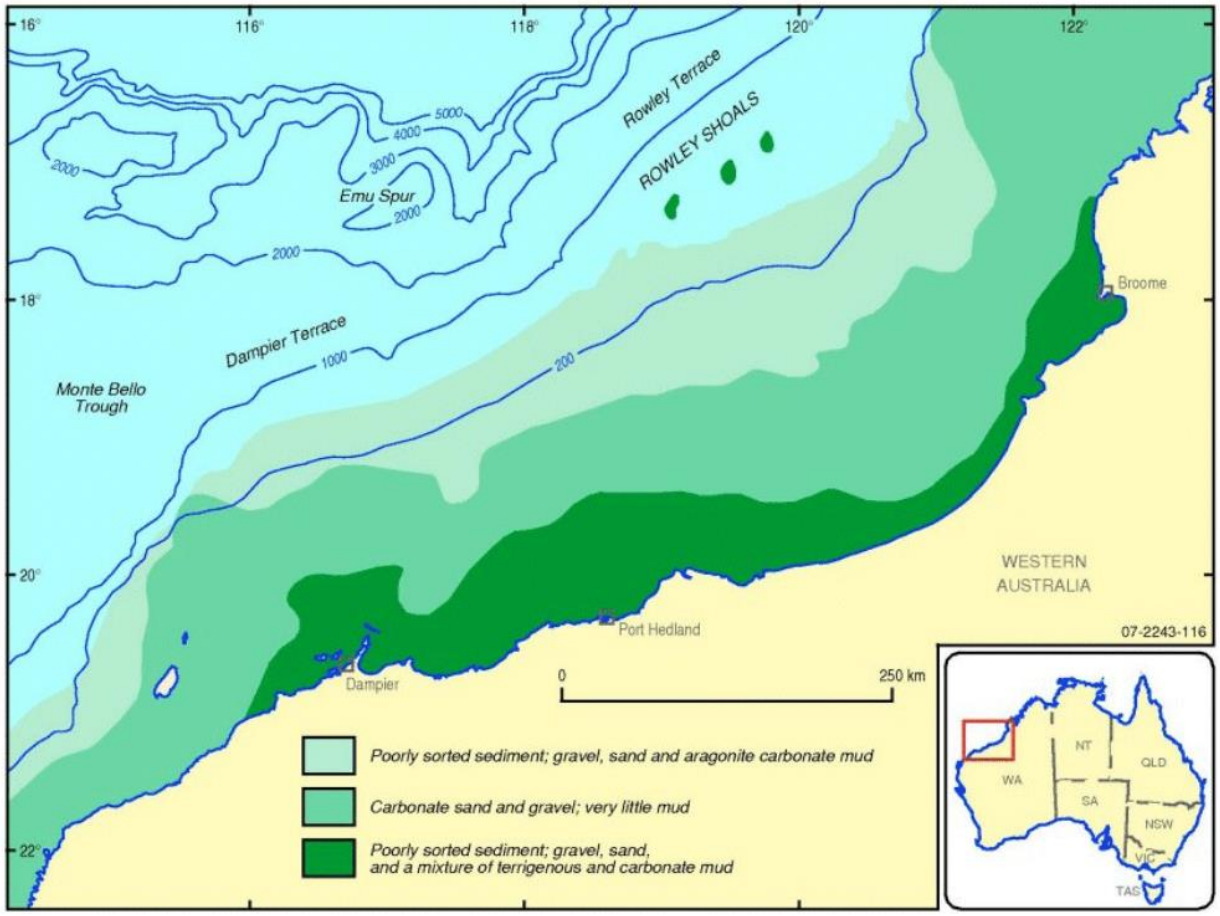


Figure 2-9. Overview of the seabed sediments of the NWMR (data source: Baker et al**., 2008)**

3. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (EPBC ACT)

3.1 Summary of Matters of National Environmental Significance (MNES)

This section summarises the matters of national environmental significance (MNES) reported for the three bioregions; NWMR **(Table 3-1),** SWMR (**Table 3-2**) and NMR (**Table 3-3**), based on the Protected Matters search reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Additional information on these MNES is provided in subsequent sections (referenced in **Table 3-1**, **Table 3-2** and **Table 3-3**).

Table 3-1 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the NWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	2	Shark Bay The Ningaloo Coast	**Section 11**
National Heritage Places	5	Shark Bay The Ningaloo Coast The West Kimberley The Dampier Archipelago (including Burrup Peninsula) Dirk Hartog Landing Site 1616	**Section 11**
Wetlands of International Importance (Ramsar)	4	Ashmore Reef National Nature Reserve Eighty Mile Beach Ord River Floodplain Roebuck Bay	**Section 11**
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	1	Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Terrestrial community and not considered further
Listed Threatened Species	109	Refer NWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	**Section 5 – Section 9**
Listed Migratory Species	97	Refer NWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	**Section 5 – Section 9**

Table 3-2 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the SWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	1	Australian Convict Sites (Fremantle Prison).	**Section 11**
National Heritage Places	5	Cheetup Rock Shelter Batavia Shipwreck site HMAS Sydney II and HSK Kormoran Fitzgerald River National Park Fremantle Prison (former).	**Section 11**

MNES	Number	Description	Section of this Document
Wetlands of International Importance (Ramsar)	6	Becher Point Wetlands Forrestdale and Thomsons Lakes Peel-Yalgorup System Vasse-Wonnerup System Lake Gore Lake Warden System	**Section 11**
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	9	SWMR Subtropical and Temperate Coastal Saltmarsh Terrestrial Banksia Woodlands of the Swan Coastal Plain ecological community Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond) Sedgelands in Holocene dune swales of the southern Swan Coastal Plain Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion Empodisma peatlands of southwestern Australia	**Section 11**
Listed Threatened Species	166	Refer SWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A
Listed Migratory Species	89	Refer SWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A

Table 3-3 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the NMR

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	0	N/A	N/A
Wetlands of International Importance (Ramsar)	0	N/A	N/A
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	0	N/A	N/A
Listed Threatened Species	82	Refer NMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A
Listed Migratory Species	82	Refer NMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A

3.2 Part 13 Statutory Instruments for EPBC Act Listed Threatened and Migratory Species in the NWMR, SWMR and NMR

A screening process was conducted to identify which EPBC Act listed threatened and migratory species, and associated Part 13 statutory instruments, are relevant in the context of the assessment of impacts and risks associated with petroleum activities in each of the Woodside activity areas. The screening criteria included:

- overlap amongst the Woodside activity areas with habitat critical for survival (marine turtles etc) and with biologically important areas (BIAs) (overlapping the marine environment) for any listed threatened and/or migratory species as reported in the PMST searches;
- published literature, unpublished reports and/or credible anecdotal information (e.g. feedback from stakeholders) indicating species presence/occurrence within the Woodside activity areas;
- temporal overlap between the likely timing of petroleum activities and peak periods for key critical life stage behaviours (e.g. breeding, nesting, calving, resting, foraging, migration); and
- environmental aspects associated with petroleum activities that have been identified as a key threat to a species in a Part 13 statutory instrument (e.g. anthropogenic noise, light emissions, marine debris).

Relevant EPBC Act threatened and migratory species and their Part 13 statutory instruments are listed in **Table 3-4**. For the full list of EPBC Act listed species for each marine bioregion refer to the PMST reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Table 3-4 Summary of EPBC Act threatened and migratory species to be considered for impact or risk evaluation for Woodside operations

Species	EPBC Act Part 13 Statutory Instrument
All vertebrate marine fauna	Threat Abatement Plan for the impacts of marine debris on vertebrate marine life (Commonwealth of Australia, 2018)
Marine Mammals	
Blue whale	Conservation Management Plan for the Blue Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015–2025 (Commonwealth of Australia, 2015a)
Southern right whale	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW, 2024a)
Sei whale	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Fin whale	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
Australian sea lion	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPAC, 2013a) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)
Marine Reptiles	
All marine turtle species (loggerhead, green, leatherback, hawksbill, flatback, olive ridley)	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW, 2023d)
Mitchell's water monitor	Conservation Advice for *Varanus mitchelli* (Mitchell's water monitor) (DCCEEW, 2023c)
Short-nosed sea snake	Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Leaf-scaled sea snake	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Fishes, Sharks, Rays and Sawfishes	
Grey nurse shark (West coast population)	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (DOE, 2014)
White shark	Recovery Plan for the White Shark (*Carcharodon carcharias*) 2013 (DSEWPAC, 2013b)
Whale shark	Conservation Advice *Rhincodon typus* whale shark (Threatened Species Scientific Committee, 2015d)
All sawfishes (largetooth, green, dwarf, speartooth, narrow)	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Seabirds	
Migratory seabird species	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2020) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW, 2023d)

Species	EPBC Act Part 13 Statutory Instrument
Australian fairy tern	National Recovery Plan for the Australian Fairy Tern *Sternula nereis nereis (Commonwealth of Australia, 2020)* EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Australian lesser noddy	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 hectares (DEWHA, 2009)
Amsterdam Petrel	National Recovery Plan for albatrosses and petrels (DCCEEW, 2022) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Brown booby	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Wedge-tailed shearwater	
Flesh-footed shearwater	
Wilson's storm petrel	
Shorebirds	
Migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c) EPBC Act Policy Statement 3.21—Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW, 2023d)
Eastern curlew, far eastern curlew	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEEW, 2023f)
Curlew sandpiper	Conservation Advice *Calidris ferruginea* curlew sandpiper (DCCEEW, 2023g)
Bar-tailed godwit (*menzbieri*)	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (DCCEEW, 2024e)
Lesser sand plover	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threated Species Scientific Committee, 2016)
Australian painted snipe	Conservation Advice *Rostratula australis* Australian painted snipe (Threatened Species Scientific Committee 2013a)
Great knot	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW, 2024g)
Red knot, knot	Conservation Advice *Calidris canutus* Red knot (DCCEEW, 2024f)
Greater sand plover	Conservation Advice *Charadrius leschenaultii* Greater sand plover (DCCEEW, 2023h)
Black-tailed godwit	Conservation Advice for *Limosa limosa* black-tailed godwit (DCCEEW, 2024h)
Common greenshank	Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024i)
Asian dowitcher	Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024j)
Ruddy turnstone	Conservation Advice for *Arenaria interpres* (ruddy turnstone) (DCCEEW, 2024k)
Sharp-tailed sandpiper	Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024l)

Species	EPBC Act Part 13 Statutory Instrument
Terek sandpiper	Conservation Advice for Xenus cinereus (terek sandpiper) (DCCEEW, 2024m)
Grey plover	Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW, 2024n)

4. HABITAT AND BIOLOGICAL COMMUNITIES

4.1 Regional context

The NWMR habitats range from nearshore benthic primary producer habitats such as seagrass beds, coral communities and mangrove forests, to offshore soft sediment seabed habitats and submerged and emergent reef systems. These habitats support biological communities that range from low density sessile and mobile benthos, such as sponges, molluscs and echinoids (with noted areas of sponge hotspot diversity) in offshore soft sediment habitat (DSEWPAC, 2012a) to complex, diverse, remote coral reef systems.

Benthic primary producer habitats, such as seagrass beds, coral communities and mangrove forests within the SWMR, are described as a mixture of tropical and temperate species, due to the seasonal influences of the tropical waters carried south by the Leeuwin Current and the temperate waters carried north by the Capes Current (DSEWPAC, 2012b).

The NMR shares similar habitat types to the NWMR. The predominant habitat of the region includes soft muddy sediments on relatively flat terrain. Other habitat types include seagrasses, reefs, shoals and coastal habitats such as mangroves and coastal wetlands (Rochester et al., 2007).

The summary of key habitats and biological communities provided in the following sub-sections is focused on the primary features of relevance to the activity areas within the NWMR – primarily the offshore habitats of the continental shelf and slope, submerged shoals and banks, and remote oceanic reef systems of recognised conservation value.

4.2 Biological Productivity of NWMR

Primary productivity of the NWMR is generally low and appears to be largely driven by offshore influences (Brewer et al., 2007), with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. Seasonal weather patterns also influence the delivery of nutrients from deep-water to shallow water. Cyclones and North-westerly winds during the North-west monsoon (approximately November–March) and the strong offshore winds of the South-east monsoon (approximately April–September) facilitate the upwelling and mixing of nutrients from deep-water to shallow water environments (Brewer et al., 2007).

The Indonesian Throughflow (ITF) has an important effect on productivity in the northern areas of the Region. Generally, its deep, warm and low nutrient waters suppress upwelling of deeper comparatively nutrient-rich waters, thereby forcing the highest rates of primary productivity to occur at depths associated with the thermocline. When the ITF is weaker, the thermocline lifts bringing deeper, more nutrient-rich waters into the photic zone and hence resulting in conditions favourable to increased productivity (DEWHA, 2007a). Similarly, the Leeuwin Current has a significant role in determining primary productivity in the southern areas of the NWMR. As with the ITF, the overlying warm oligotrophic waters of the Leeuwin Current suppress upwelling. A subsurface chlorophyll maximum is therefore formed at a depth in the water column where nutrients and light are sufficient for photosynthesis to proceed. Seasonal changes in the strength of the Leeuwin Current influence primary productivity levels, and seasonal interactions between the Leeuwin and Ningaloo currents in the south of the NWMR, are believed to be particularly important (DEWHA, 2007a).

Internal tides (defined as internal waves generated by the barotropic tide) are a striking characteristic of many parts of the NWMR and are associated with highly stratified water columns. Internal waves (solitons), which can raise cooler, generally more nutrient rich water higher in the water column, are generated between water depths of 400 m and 1000 m where bottom topography results in a significant change in water depth over a relatively short distance. Cyclones are episodic events in the NWMR that contribute to spikes in productivity through enrichment of surface water layers due to enhanced vertical mixing of the water column. Temporary increases in primary productivity as a result of cyclones generally last between one and two weeks, and it is believed that the impacts of

cyclones are generally limited to waters less than 100 m deep and affect benthic communities more substantially than pelagic systems (DEWHA, 2007a).

Water depth also has a significant overriding influence over productivity in the marine environment, due to its influence on light availability. This is reflected by distinct onshore and offshore assemblages of major pelagic groups of phytoplankton, microzooplankton, mesoplankton and ichthyoplankton. Productivity booms are thought to be triggered by seasonal changes to physical drivers or episodic events, as detailed above, which result in rapid increases in primary production over short periods, followed by extended periods of lower primary production. The trophic systems in the NWMR are able to take advantage of blooms in primary production, enabling nutrients generated to be used by different groups of consumers over long periods (DEWHA, 2007a).

Little detailed information is available about the trophic systems in the NWMR. The utilisation of available nutrients is thought to differ between pelagic and benthic environments, influenced by water depth and vertical migration of some species groups in the water column. In the pelagic system, it is thought that approximately half of the nutrients available are utilised by microzooplankton (e.g. protozoa) with the remainder going to macro/meso-zooplankton (e.g. copepods). As primary and secondary consumers, gelatinous zooplankton (e.g. salps, coelenterates) and jellyfish are thought to play an important role in the food web, contributing a significant proportion of biomass in the marine system during and for periods after booms in primary productivity. Salps are semi-transparent, barrel-shaped marine animals that can reproduce quickly in response to bursts in primary productivity and provide a food source for many pelagic fish species (DEWHA, 2007a).

4.3 Planktonic Communities in the NWMR

The NWMR has two distinct phytoplankton assemblages; a tropical oceanic community in offshore waters and a tropical shelf community confined to the NWS (Hallegraeff, 1995). MODIS (Moderate Resolution Imaging Spectrometer) satellite datasets from the NWMR indicates that chlorophyll (and thus phytoplankton) levels are low in summer months (December to March) and higher in the winter months (Schroeder et al., 2009). Low chlorophyll levels during summer months may be a result of lower plankton productivity during the wet season or lower nutrient inputs from warm surface waters dominant during summer. However, it is likely that much of the primary production is taking place below the surface, where the MODIS imagery does not penetrate (Schroeder et al., 2009). The winter months are relatively cloud-free and surface chlorophyll is high throughout most of the region.

Zooplankton may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008) and fish larvae abundance (CALM, 2005a) can occur throughout the year. Spatial and temporal patterns in the distribution and abundance of macro-zooplankton on the North-west Shelf are influenced by sporadic climatic and oceanographic events, with large inter-annual changes in assemblages (Wilson et al., 2003). Amphipods, euphausiids, copepods, mysids and cumaceans are among the most common components of the zooplankton in the region (Wilson et al., 2003).

4.3.1 Browse

Phytoplankton within the Browse activity area is expected to reflect the conditions of the NWMR. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (e.g. bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson et al., 2007).

Zooplankton within the activity area may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008; Simpson et al., 1993) and fish larvae abundance (CALM, 2005a) can occur throughout the year.

The influence of the Indonesian Throughflow restricts upwelling across the Kimberley System (approximately equates to the Browse activity area). However, small-scale topographically associated current movements and upwellings are thought to occur, which inject nutrients into specific locations within the system and result in 'productivity hot-spots'. Similarly, internal waves, generated at the shelf break (e.g. west of Browse Island and around submerged cliffs located at the continental shelf edge) play a role in making nutrients available in the photic zone (Sutton et al, 2019). Productivity within shallow nearshore waters is driven primarily by tidal movement and terrestrial runoff whereby nutrients are mixed by tidal action and new inputs of organic matter come from the land.

4.3.2 North-west Shelf / Scarborough

Plankton communities within the NWS / Scarborough activity area are expected to reflect conditions of the NWMR. Internal tides along the NWS and Exmouth Plateau result in the drawing of deeper cooler waters into the photic zone, stirring up nutrients and triggering primary productivity. Broadly the greatest productivity within this sub-system is found around the 200 m isobath associated with the shelf break.

4.3.3 North-west Cape

Waters of the North-west Cape experience a relatively high diversity of phytoplankton groups including diatoms, coccolithophorids and dinoflagellates. During the warmer months blooms of *Trichodesmium* occur in the region, these have been observed particularly on the frontal systems around Point Murat (Heyward et al., 2000).

Average Leeuwin Current phytoplankton biomass is characteristic of low productivity oceanic waters like the Indian, Pacific and Atlantic Oceans (Hanson et al., 2005). However, the Canyons linking the Cuvier Abyssal Plain and Cape Range Peninsula Key Ecological Feature(KEF) are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. The canyons are thought to interact with the Leeuwin Current to produce eddies inside the heads of the canyons, resulting in waters from the Antarctic intermediate water mass being drawn into shallower depths and onto the shelf (Brewer et al. 2007). These waters are cooler and richer in nutrients and strong internal tides may also aid upwelling at the canyon heads (Brewer et al. 2007). The narrow shelf width (about 10 km) near the canyons facilitates nutrient upwelling and relatively high productivity. This high primary productivity leads to high densities of primary consumers, such as micro and macro-zooplankton, such as amphipods, copepods, mysids, cumaceans, euphausiids (Brewer et al., 2007).

4.4 Habitats and Biological Communities in the NWMR

4.4.1 Offshore Habitats and Biological communities

The NWMR has a large area of continental shelf and continental slope, with a range of bathymetric features such as canyons, plateaus, terraces, ridges, reefs, banks and shoals. The marine environment in this region is typified by tropical to sub-tropical marine ecosystems with diverse habitats from soft sediments, canyons, remote oceanic coral reef systems and continental shelf limestone pavement seabed habitat. The NWMR encompasses large seabed areas of deepwater seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and spare benthic biota. Comprehensive surveys and documentation of habitats and biota from the shelf to deep waters (100 m to 1000 m) spanning 13 sites between Barrow Island and Ashmore Reef, running downslope across the continental shelf and slope of NWS were conducted in 2007 (Williams et al., 2010). Sites on the continental slope (approximately 400 m deep) predominately comprised soft, muddy sediments and epifauna were sparsely distributed and limited to isolated individual sessile biota such as crinoids, anemones, glass sponges and sea pens. Occasional non-sessile biota, characteristic of the deeper water benthic communities was recorded and included: echinoderms (urchins, holothurians and sea stars) and decapod crustaceans (prawns and crabs). Similar benthic biota composition was reported for the continental slope seabed habitats at depths of 700-1000 m (Williams et al., 2010) With reference to the North-west Shelf (NWS), multiple surveys have documented habitats comprising bare unconsolidated carbonate sediments supporting a sparse assemblage of deposit and filter feeding organisms, including glass sponges, urchins, sea cucumbers, sea stars and crustaceans (URS 2010). Filter feeding communities documented within the NWS include bryozoans, sponges, gorgonians, and hydroids attached to consolidated substrate; these were interspersed with sand which hosted fewer filter feeders (AIMS 2014). Infauna associated with soft, unconsolidated sediment habitat such as polychaetes are widespread and well represented along the continental shelf and upper slopes (Brewer et al. 2007, RPS 2012). The key habitats and biological communities that are representative of the broader NWMR are summarised in **Table 4-1**.

The key habitats and biological communities representative of the broader SWMR and NMR are summarised in **Table 4-2** and **Table 4-3**.

There is a marked biodiversity gradient from high ecological valued coastal (primary producer habitats and associated benthic and mobile biota) to the lower valued deeper offshore habitats comprising soft, unconsolidated sediments and typically sparser biota (epifauna and infauna), with the exception of the submerged shoal features, remote oceanic reef systems of the Rowley Shoals, Scott Reef and Ashmore Reef as well as the fringing reef habitats of Ningaloo, the Kimberley coastline, the offshore island groups such as Barrow Island, Lowendal and Montebellos and the Dampier Archipelago. A brief overview of the high valued biodiversity reef and mesophotic habitats and associated benthic communities are presented in the following sub-sections.

4.4.2 Browse

The most diverse habitats and benthic communities in the Kimberley region of North-western Australia, are where the oceanic reef systems of Ashmore, Cartier, Scott and Seringapatam reefs, and the Rowley Shoals, sit near the edge of the continental shelf hundreds of kilometres from the mainland and from each other (Gilmour et al., 2019 and 2023), refer to **Figure 4-1.** The long-term monitoring program for Scott Reef and the Rowley Shoals conducted by AIMS since 1994 is now one of the world's longest studies of coral reef ecosystems and provides unprecedented understanding of the background (baseline) changes at oceanic reefs on Australia's North-west Shelf, encompassing the physical drivers, and underlying processes of change (impact and recovery) from acute disturbances (heat stress – coral mass-bleaching and cyclones).

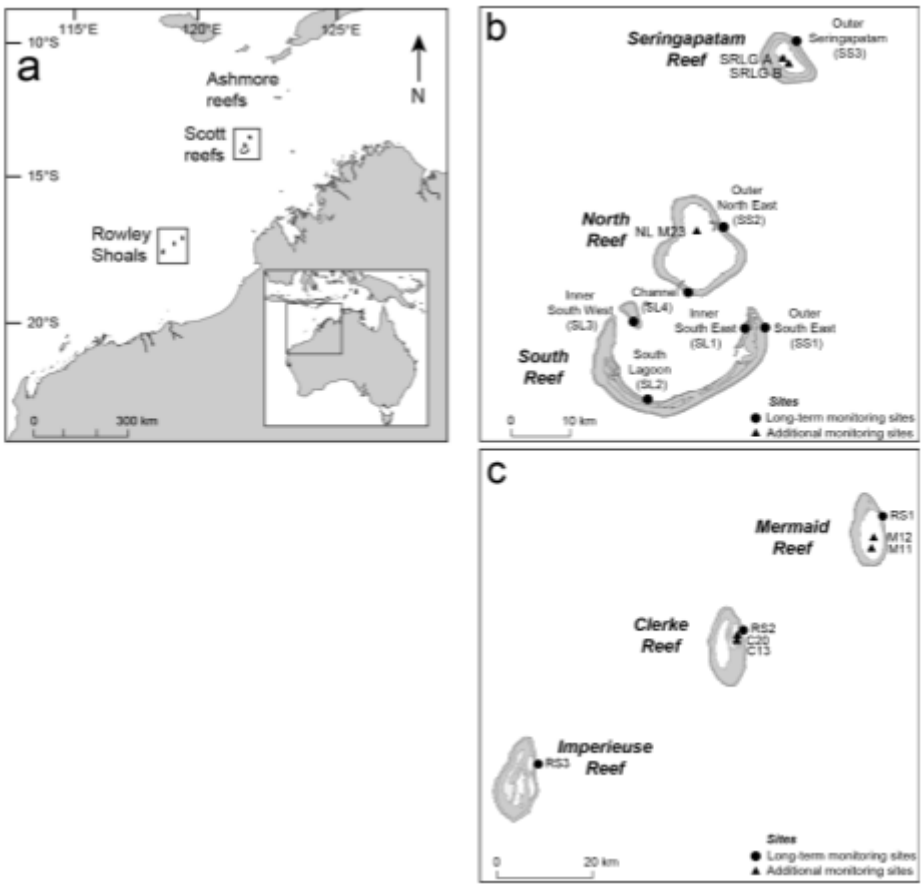


Figure 4-1. The position of Scott Reef, Ashmore and the Rowley Shoals off North-western Australia and location of permanent long-term monitoring sites (source: Gilmour et al., 2023)

Scott Reef is an annular reef approximately 17 km long and 16 km wide comprising two coral reef atolls rising steeply from depths of approximately 400-500 m. These atolls, referred to as South Scott Reef and North Scott Reef, are separated by a deep channel (**Figure 4-1**). North Scott Reef features an emergent reef flat, outer slope habitats and a shallow lagoon approximately 20 m deep with two small channels linking it to the surrounding ocean. The shallow closed waters of North Scott Reef lagoon contain a range of habitats from bare sand, sand with coral outcrops, and to shallow to deep lagoonal coral dominated habitats (Gilmour et al., 2013). This in contrast to the deeper, more open lagoon of South Scott Reef described as an extensive, unique mesophotic (30-70 m depth) coral dominated habitat comprising hard corals, calcareous algae, soft corals, sponges, bryzoans and other invertebrates (Gilmour et al. 2013; Heyward and Radford, 2019). It is largely protected from the direct influence of major storms by the surrounding horseshoe-shaped emergent reef rim (Heyward and Radford, 2019). South Scott Reef shallow water habitats also include reef flats (of low coral cover) and extensive outer reef slopes with the highest hard coral diversity of any habitat at Scott Reef (Gilmour et al., 2013).

Over the past 30 years the coral communities at Scott Reef have been extensively studied and the Scott Reef long-term monitoring program showed that from 1994-2021 the mean cover of hard and soft corals on the reef slopes was 36%, and ranged between 13% to 59%. Decreases in coral cover were caused by damaging waves, generated by storms and cyclones, and recurrent heat stress causing coral bleaching. The most severe heat stress and mass coral bleaching occurred in 1998 and 2016. Recovery from the first mass-bleaching event in 1998 took over a decade. By 2010, coral cover had reached pre-bleaching levels (45%). Despite moderate coral bleaching and cyclone disturbances, cover had increased by 49% in January 2016, after which the reefs were impacted by a second mass bleaching event that reduced mean coral cover to 15%. Five years after the 2016 mass bleaching event, total cover of hard and soft corals had reached 34%, showing a similar rate

of recovery to that following the 1998 mass bleaching (Gilmour et al. 2023). The Rowley Shoals comprise three distinct reef continental shelf atolls of similar dimension, shape and orientation, named Mermaid Reef, Clerke Reef and Imperieuse Reef. The reefs are orientated North-south and are approximately 30-40 km apart. Each atoll covers an area approximately 80-90 km^2 and extends almost vertically from seafloor depths of approximately 400 m. Each atoll comprises extensive lagoon habitat composed of bare sand, coral dominated patches and coral outcrops, emergent reef crests and outer reef slopes. At high tide only the sandy cays of Clerke Reef and Imperieuse Reef remain visible.

Across the Rowley Shoals, the reef crest and reef slope were most similar and the lagoon most unique in terms of habitat and benthic communities. Hard corals and coralline algae were the most abundant biota (>40%) and other benthic organisms such as sponges, ascidians and macroalgae are rare (<5%). Soft corals were also rare (<1%) at all reefs and habitats, apart from the reef slope (4%) at Mermaid Reef. Across all surveys (1995-2019), the mean cover of hard and soft corals at the reef slope was 46% and ranged between 26% and 58%. Decreases in coral cover were primarily due to frequent storms and cyclones. Between 2005 and 2008, three cyclones and moderate heat stress caused a mean reduction in coral cover (52% to 42%) at the reef slope habitat across the Rowley Shoals. Coral bleaching was low (<10%) in January 2016 except for minor to moderate (11-30%) bleaching at two lagoon sites at Mermaid Reef. A prolonged heat stress period (45 days) in May 2020 caused the worst coral bleaching on record (approximately 20%) across reef habitats with the highest heat stress and declines in coral cover at the reef slope for Imperieuse Reef (9%) and minor bleaching and small decreases in coral cover at the reef slope (5%) and lagoon (3%) at Clerke Reef (Gilmour et al. 2023).

The reefs of Seringapatam, Scott Reef, Ashmore Reef and Cartier Island are recognised as key ecological features (KEFs) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves are listed and described in **Section 11** and includes: Commonwealth Marine Parks of Ashmore Reef, Cartier Island, Kimberley and Mermaid Reef, and State Marine Parks of the North Kimberley, the Rowley Shoals and Lalang-garram-horizontal falls and North Lalang-garram.

4.4.3 North-west Shelf / Scarborough

The NWS contains numerous submerged shoal features and as relatively recent surveys have revealed several of these features are of high biodiversity value comprising hard coral and macro-algae communities on upper reaches of the shoals and mesophotic filter-feeding benthic communities in deeper waters on and in proximity to the shoal features, namely, Rankin Bank and Glomar Shoal.

Rankin Bank

Rankin Bank comprises three main sedimentary banks rising steeply from between 80 and 120 m below sea level, reaching 20 – 40 m below the sea surface and featuring plateaus and troughs (Abdul Wahab et al., 2018). Rankin Bank is one of only two large, complex bathymetrical features on the outer western shelf of the West Pilbara (the other being Glomar Shoal, about 125 km West-south west) (Abdul Waheb et al., 2018), **Figure 4-1**.

Surveys of Rankin Bank were undertaken by the Australian Institute of Marine Science (AIMS) in 2013 and in 2017 to better understand the habitats and complexity of the submerged shoal ecosystems, and associated fish assemblages (AIMS, 2014; Abdul Waheb et al., 2018 and 2017 - Jones et al. 2021). The surveys were undertaken using various methods, including multibeam survey, towed video, Stereo Baited Underwater Video Survey (SBRUVS) and beam transmissions (to measure turbidity), at depths between 20 and 115 m (Abdul Waheb et al., 2018). Water column data were also collected in January 2017 to examine potential temporal variation in these parameters (Abdul Waheb et al., 2018).

Seabed sediments at Rankin Bank were primarily carbonate with a grain size of mostly sand, with finer muds found at the deeper sample sites (AIMS, 2014). Sand was also found to increase with depth and unconsolidated reef exceeded 30% at all depths (Abdul Waheb et al., 2018). Hydrocarbon and trace metal concentrations in sediments indicated the bank was unaffected by anthropogenic pollution (AIMS, 2014). Turbidity was lower at Rankin Bank than Glomar Shoal during the survey, with beam transmissions remaining above 95% at all depths (Abdul Waheb et al., 2018). Turbidity was slightly lower in 2017, whereas temperature and salinity were slightly higher at all depths (Abdul Waheb et al., 2018).

Proportion of cover by benthic taxa was highest for macroalgae and hard corals, particularly at depths less than 40 m, and decreased with increasing depth. Other benthic taxa included soft corals and sponges which were present in lower proportions at all depths. Encrusting corals were common, reaching cover of about 12.5% at depths less than 40 m. Solitary corals were also present (about 10% cover) primarily at depths between 40 and 60 m. Foliose and submassive/columnar corals were also present (Abdul Waheb et al., 2018).

Fish abundance and diversity at Rankin Bank were found to be comparable with other reefs in North-west Australia, and notably twice as abundant and 1.5 times more diverse than those fishes identified in a comparable survey at Glomar Shoal (Abdul Waheb et al., 2018). A total of 205 fish species were recorded at Rankin Bank, 100 of which were common to both Glomar Shoal and Rankin Bank. Depth, location, sand, sponges and hard coral were all found to contribute to the fish communities present. Specifically, fish communities were primarily associated with hard coral and shallow depths at Rankin Bank (Abdul Waheb et al., 2018).

Glomar Shoal

Glomar Shoal is a large (215 km^2) and complex bathymetrical feature situated on the outer continental shelf off the Pilbara. Glomar Shoal is about 8.5 times wider than Rankin Bank at the 60 m contour. Glomar Shoal rises from 80 m depth on its South-west side and 70 m depth on its North-eastern side to form a single plateau at 40 m depth (Abdul Waheb et al., 2018). Together with Rankin Bank, these remote shallow water areas represent regionally unique habitats and are considered

likely to play an important role in the productivity of the Pilbara region (AIMS 2014, Abdul Wahab et al. 2018), **Figure 4-1**.

Baseline biodiversity and habitat mapping surveys of the benthic habitats and communities at Glomar Shoal and Rankin Bank were undertaken in 2013 and 2017 by AIMS (2014) as detailed in Abdul Waheb et al*.,* (2018) and Jones et al. (2021), respectively. Salinity and temperature were found to be slightly higher in 2017 compared with the 2013 values (Abdul Wahab et al., 2018), most likely due to seasonality. Substrates at Glomar Shoal were found to vary with depth, from coarse unconsolidated sediment at depths greater than 60 m and hard substrate (i.e. consolidate reef) supporting benthic communities comprising hard and soft corals, sponges and macroalgae at depths < 40 m (Abdul Wahab et al., 2018). Total cover of benthic taxa (hard coral, soft coral, sponges and other benthic biota) was highest at depths < 40 m and decreased with depth (Abdul Wahab et al., 2018). At depths of 60-80 m benthic cover was low (about 2%) and at depths greater than 80 m benthic cover was barely present (Abdul Wahab et al., 2018).

A total of 170 fish species were identified at Glomar Shoal and fish abundance and diversity of the demersal fish communities of Glomar Shoal were found to vary with seabed habitat type; sand, hard coral and sponge coverage influenced fish communities, with higher abundance and diversity of fish associated with shallow hard coral habitats. (Abdul Wahab et al., 2018). In general, the fish abundance and diversity of Glomar Shoal are considered comparable with other reefs and the submerged shoals and banks in the region, although less diverse and abundant than fish assemblages at Rankin Bank (Abdul Wahab et al., 2018).

Glomar Shoal is recognised as a Key Ecological Feature (KEF) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) are described in **Section 11** and includes: Commonwealth Marine Parks of Montebello and State Marine Parks Montebello Islands and Barrow Island and the Barrow Island marine management area.

4.4.4 North-west Cape

Ningaloo Reef and Shark Bay are among Australia's iconic marine areas, and the significance of these ecosystems is recognised through their inclusion in State and Commonwealth Marine Parks and the World Heritage Register. Ningaloo Reef is the only example in the world of an extensive fringing reef on the West coast of a continent and is host to over 200 coral species and more than 500 reef fish species. Shark Bay is the most westerly point of Australia and represents a transition zone between temperate and tropical marine fauna, resulting in high species diversity (Miller et al., 2015), including fringing coral communities on the leeside of the barrier islands of Dirk Hartog, Bernier and Dorre. Ningaloo Reef is one of the longest (approximately 300 km) and most pristine fringing reefs in the world, with an unusually narrow continental shelf. Deep oceanic waters, the reef and coastline habitats and benthic communities are in close proximity resulting in a huge array of internationally significant marine life coexisting. More than 200 hard coral species, 500 fish, 650 mollusc, 600 crustacean, 1000 marine algae, 155 sponge and 25 echinoderm species have been recorded from the shelf, slope and deep-water habitats[2]. Refer to the CSIRO Ningaloo Outlook program for further information and publications relating to the shallow and deep-water reef systems, and megafauna species (marine turtles and whale sharks)[3].

The extensive reef system has been classified by topography and benthic cover using airborne hyperspectral surveys and much of the area was allocated as shallow, flat lagoons intersected by narrow, deeper channels that facilitate water circulation. Five distinct geomorphic/benthic classes of coral-algae mosaics in different topographic settings: coral and algal communities (reef flat and very shallow areas), coral and algal communities (backreef and shallow forereef), coral and algal

[2] https://www.dbca.wa.gov.au/management/world-heritage-areas/ningaloo-coast-world-heritage-area#:~:text=One%20of%20the%20longest%20and,life%20coexisting%20in%20one%20area.[accessed on 18/08/2024]

[3] https://research.csiro.au/ningaloo/outlook/research-outputs/publications/

communities (deep forereef and other deep areas), sand or limestone pavement (lagoonal slopes and flat lagoon areas) (Kobryn et al., 2022).

Ningaloo and the Muiron Islands fringing reef habitat supports benthic communities dominated by algae and consolidated reef in the shallow reef environment. Surveys conducted by AIMS in 2024 documented hard coral cover averaged approximately 13% across the Ningaloo Marine Park area (Miller et al., 2015). A notable pattern in the benthos recorded by Miller et al. (2015) was an increase in coral cover with latitude, with the highest coral cover recorded around Coral Bay and the reef areas in southern Ningaloo. Coral cover was the lowest at the East Ningaloo Province (northern Exmouth Gulf) (<6%). Relative to Scott Reef and the Rowley Shoals, the Ningaloo benthic communities are distinct in that they are characterised by high biotic cover overall, but dominated by algal cover and with less than half the cover of key biota including hard corals, soft corals and sponges as recorded on offshore reefs (Miller et al., 2015).

Ningaloo Reef is vulnerable to storm damage and marine heat stress events that have resulted in past localised coral damage and moderate coral bleaching. Coral bleaching occurred in 2022 due to warm ocean temperatures driven by the 2021–22 La Niña. The region's last severe marine heatwave was driven by the 2010–11 La Niña, which resulted in bleaching being recorded for the first time on Ningaloo[4]. Also of note is the recurrent deoxygenation events at Bills Bay (Coral Bay) following coral spawning events. In March 2022, the deoxygenation event was triggered by a combination of weather and oceanographic conditions that led to a prolonged trapping of coral spawn in Bills Bay and this in turn caused mass coral mortality and a large but localised fish kill. The 2022 deoxygenation event was the seventh such event recorded in documented history (Richards et al., 2024).

The Shark Bay region is renowned for its terrestrial and marine biodiversity including seagrass cover extending over 4,000 km^2 of the bay and the 1.030 km^2 Wooramel Seagrass Bank is the largest structure of its type in the world. Baseline surveys conducted in 2014 by AIMS specifically targeted the outer Shark Bay area and the habitats and benthic communities surrounding the barrier islands of Dirk Hartog, Bernier and Dorre. Sand was a dominant feature of the benthos (>60%), particularly in areas inside the bay and in deep water outside the bay. Benthic communities in relatively sheltered areas of outer Shark Bay were characterised by seagrass and turf algae, whereas in more exposed locations, benthos was dominated by macroalgal and turf algal communities. Corals and sponges made up <1% of the cover in outer Shark Bay, although due to inclement weather during surveys shallow areas where coral species are more likely to occur could not be surveyed. Observations of patchy but high coral cover in shallow parts of some towed video transects suggests coral cover across outer Shark Bay may have been underestimated. The highest coral cover was recorded in the channel between Dirk Hartog and Dorre Islands, indicating this area may be particularly favourable for coral growth (Miler et al., 2015).

Commonwealth waters adjacent to Ningaloo Reef is recognised as a Key Ecological Feature (KEF) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) are described in **Section 11** and includes: Commonwealth Marine Parks of Ningaloo and Shark Bay and State Marine Parks of the Ningaloo Reef and the Muiron Island marine management area and Shark Bay marine park and Hamelin Pool nature reserve.

4.4.5 Shoreline, coastal habitats and biological communities

The NWMR encompasses offshore and coastal waters, islands and mainland shoreline habitats typified by mangroves, tidal flats, saltmarshes, coral reefs (remote, offshore reef systems to extensive fringing reef systems like NingaloolikeNingaloo), sandy beaches, and smaller areas of rocky shores. Each of these shoreline types has the potential to support different flora and fauna assemblages due to the different physical factors (e.g. waves, tides, light, etc.) influencing the habitat.

[4] https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate

The key shoreline habitats representative of the broader NWMR are summarised in **Table 4-1**.

The key shoreline habitats representative of the broader SWMR and NMR are summarised in **Table** 4-2 and **Table 4-3**.

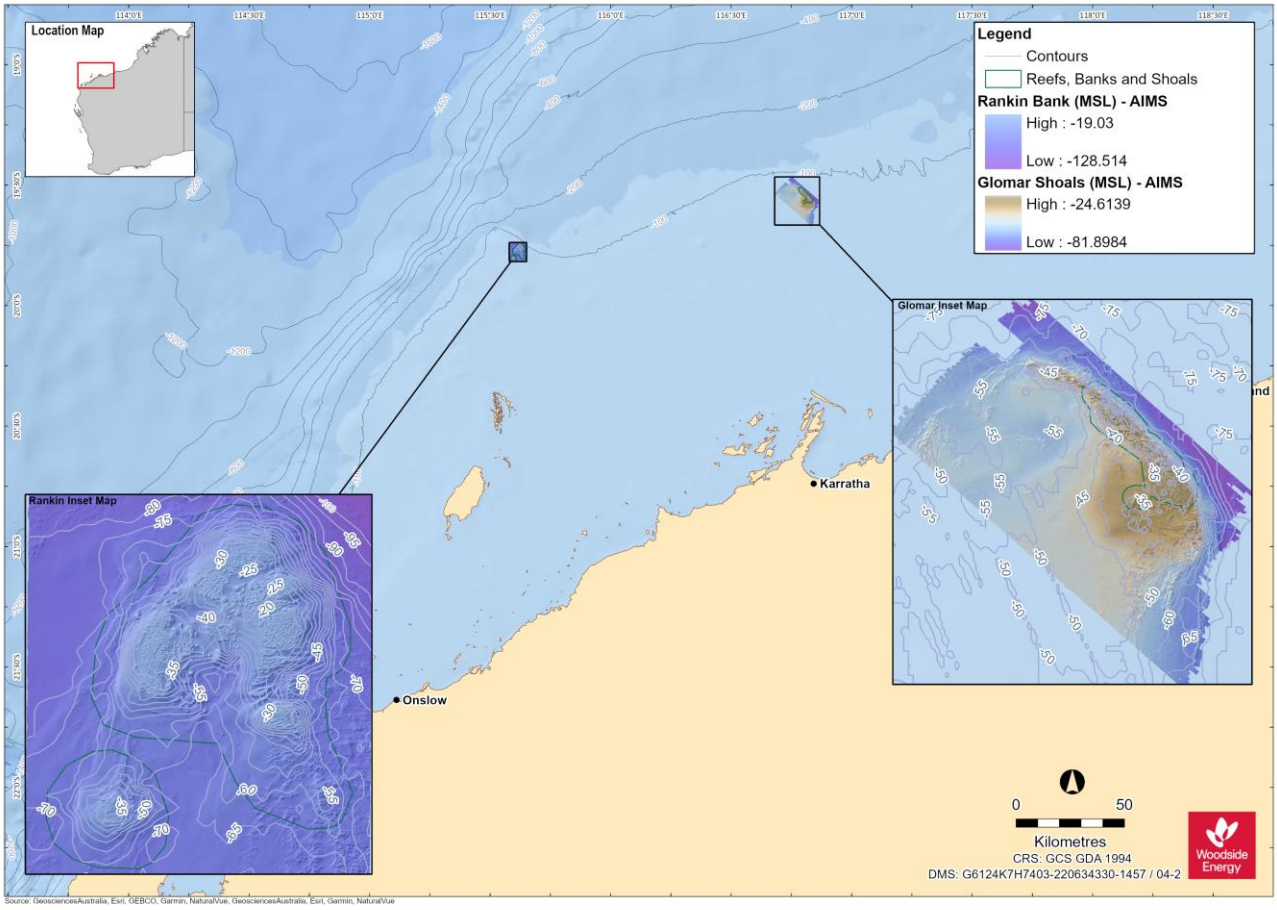


Figure 4-2. Habitat maps of Rankin Bank and Glomar Shoal (source: AIMS, 2014)

Table 4-1 Habitats and biological communities within the NWMR

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Offshore habitats and biological communities				
Soft sediment with infauna	The offshore environment of the NWMR comprises predominately of seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and sparse benthic biota. The benthic communities inhabiting the predominantly soft, fine sediments of the offshore habitats are characterised by infauna such as polychaetes, and sessile and mobile epifauna such as crustacea (shrimp, crabs and squat lobsters) and echinoderms (starfish, cucumbers). The density of benthic fauna is typically lower in deep-sea sediment habitats (greater than 200 m) than in shallower coastal sediment habitats, but the diversity of communities may be similar.			
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. This habitat is found in offshore areas of the NWMR, often associated with key ecological features such as the ancient coastline at 125 m depth contour KEF.			**Section 10**
	Ancient coastline at 125 m depth contour KEF Continental Slope Demersal Fish Communities KEF	Ancient coastline at 125 m depth contour KEF Continental Slope Demersal Fish Communities KEF	Ancient coastline at 125 m depth contour KEF Continental Slope Demersal Fish Communities KEF	**Section 10**
Coral Reef	Coral reef habitats within the NWMR have a high species diversity that includes corals, and associated reef species such as fishes, crustaceans, invertebrates, and algae. Coral reef habitats of the offshore environment of the NWMR include remote oceanic reef systems, large platform reefs, submerged banks and shoals.			
	Browse Island Scott Reef Seringapatam Reef Ashmore Reef Cartier Island Hibernia Reef	Rowley Shoals (including Mermaid Reef, Clerke Reef, Imperieuse Reef) Glomar Shoal Rankin Bank		**Section 4.4.1** **Section 10** **Section 11**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck et al., 2003; Wilson et al., 2010). In the northern half of Western Australia, these habitats are restricted to sheltered and shallow waters, including around offshore reef systems, due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones.			
	Scott Reef Seringapatam Reef Ashmore Reef	Rowley Shoals (including; Mermaid Reef, Clerke Reef, Imperieuse Reef)		**Section 11**
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2008). Filter feeders generally live in areas that have strong currents and hard substratum, often associated with deeper environments of the shoals and banks in the offshore NWMR.			
	Lower outer reef slopes of the oceanic reef	Glomar Shoal Rankin Bank	Cape Range canyon system	**Section 4.4.1** **Section 10**

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
	systems such as Scott Reef	Ancient coastline at 125 m depth contour KEF		**Section 11**
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR, being found around islands and reefs in the offshore areas of the region.			
	Browse Island Scott Reef (Sandy Islet) Ashmore Reef Cartier Island	Montebello Islands Lowendal Islands Barrow Island	Muiron Islands	**Section 11**
Nearshore/coastal habitats and biological communities				
Coral Reef	Coral reef habitats typically found in nearshore regions of the NWMR include the fringing reefs around coastal islands and the mainland shore.			
	Kimberley East Holothuria and Long Reefs Bonaparte and Buccaneer Archipelagos Montgomery Reef Adele complex (Beagle, Mavis, Albert, Churchill reefs, Adele Island)	Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 11**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck Jr. et al., 2003; Wilson et al., 2010). In the nearshore areas of the NWMR, these habitats are restricted to sheltered and shallow waters due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones. These areas include in bays and sounds and around reef and island groups.			
	King Sound	Roebuck Bay Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 11**
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2007a). Filter feeders generally live in areas that have strong currents and hard substratum. Conversely, higher diversity infauna is mainly associated with soft unconsolidated sediment and infauna communities are considered widespread and well represented along the continental shelf and upper slopes of the NWMR. In nearshore areas of the NWMR, these species are generally found around reef systems.			
		Deeper habitats of Rankin Bank and Glomar Shoal	Deeper habitats of Ningaloo Reef and the protected sponge zone in the South	

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al., 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie et al., 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the NWMR.			
	Dampier Peninsula (including Carnot Bay, Beagle Bay and Pender Bay)	Pilbara Coastline (including; Ashburton River Delta, Coolgra Point, Robe River Delta, Yardie Landing, Yammadery Island and the Mangrove Islands) Montebello, Lowendal and Barrow Island Groups Roebuck Bay	Shark Bay Mangrove Bay, Cape Range Peninsula Exmouth Gulf	**Section 11**
Saltmarshes	Saltmarsh communities are confined to shoreline habitats and are typically dominated by dense stands of halophytic plants such as herbs, grasses, and low shrubs. The diversity of saltmarsh plant species increases with increasing latitude (in contrast to mangroves). The vegetation in these environments is essential to the stability of the saltmarsh, as they trap and bind sediments. The sediments are generally sandy silts and clays and can often have high organic material content.			
		Eighty Mile Beach Roebuck Bay	Shark Bay	**Section 11**
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR. Sandy beaches are important for both resident and migratory seabirds and shorebirds and can also provide an important habitat for turtle nesting and breeding. They are located along many coastlines of the nearshore environments of the NWMR.			
	Cape Domett Lacrosse Island	Eighty Mile Beach Eco Beach Dampier Archipelago Inshore Pilbara Islands (Northern, Middle, and Southern)	Ningaloo Coast Muiron Islands Exmouth Gulf	**Section 11**

Table 4-2 Habitats within the SWMR

	Location
Offshore	
Soft sediment with infauna	Most of the SWMR seafloor is composed of soft unconsolidated sediments, but due to large variations in bathymetry there are marked differences in sedimentary composition and benthic assemblage structure across the region. Despite the prevalence of these habitats in the SWMR, very little is known about the composition or distribution of the region's sedimentary infauna (DEWHA, 2008b).
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments.
	Perth Canyon Marine Park Ancient coastline at 90-120 m depth contour KEF Diamantina Fracture Zone Naturaliste Plateau
Coral Reef	To date, studies and understanding of the corals within the SWMR have concentrated on the shallow water areas in State waters. Within the deeper Commonwealth waters of the SWMR little is known of the distribution of corals.
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally inhabit deeper habitat (below the photic zone) that have strong currents and hard substratum
	Ancient coastline at 90-120 m depth Diamantina Fracture Zone Naturaliste Plateau Perth Canyon Marine Park South-west Corner Marine Park
Nearshore	
Coral Reef	The northern extent of the SWMR coincides loosely with the disappearance of abundant and diverse coral from coastal habitats. To the south of Shark Bay, abundant corals occur predominantly around offshore islands, with corals at inshore sites occurring in very isolated patches of non-reef coral communities, usually of reduced species richness.
	Houtman Abrolhos Islands Rottnest Island
Seagrass and Macroalgae communities	Within the SWMR, macroalgae and seagrass communities are noted for their extent, species richness and endemism. The clear waters of the region allow light to reach greater depths, with some species found at much greater depths than usual (down to 120 m) (DEWR, 2007). Of the known species there are more than 1000 species of macro-algae and 22 species of seagrass consisting of tropical and temperate species. Seagrass and macro-algae occur in areas with sheltered bays and in the inter-reef lagoons along exposed sections of the coast.
	Houtman Abrolhos Islands Jurien Marine Park Shoalwater Islands Marine Park Geographe Marine Park Cockburn Sound Rottnest Island

	Location
	Commonwealth marine environment within and adjacent to the West-coast inshore lagoons KEF Commonwealth marine environment within and adjacent to Geographe Bay KEF Commonwealth marine environment surrounding the Recherche Archipelago KEF
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally live in areas that have strong currents and hard substratum.
	Houtman Abrolhos Islands Recherche Archipelago
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al., 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie et al., 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the SWMR.
	Houtman Abrolhos Islands
Sandy Beaches	Sandy beaches within the SWMR are important for both resident and migratory seabirds and shorebirds and can also host breeding populations of the Australian sea lion. They are found along many coastlines of the nearshore environments of the SWMR. In addition to this, beaches in the SWMR provide a variety of socio-economic values including tourism, commercial and recreational fishing, and support other recreational activities.
	Houtman Abrolhos Islands Marmion Marine Park Ngari Capes Marine Park Walpole and Nornalup Inlets Marine Park

Table 4-3 Habitats and Biological Communities within the NMR

Habitat/Community	Location
Offshore habitats and biological communities	
Soft sediment with infauna	Most of the offshore environment of the NMR is characterised by relatively flat expanses of soft sediment seabed. The soft sediments of the region are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms.
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. The variability in substrate composition may contribute to the presence of unique ecosystems. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments.
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF
Coral Reef	Offshore coral reefs within the NMR are generally associated with a series of submerged shoals and banks. The shoals/banks in the region support tropical marine biota consistent with that found on emergent reef systems of the Indo West Pacific region such as Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef (Heyward et al., 1997).
	Pinnacles of the Bonaparte Basin KEF Evans Shoal Tassie Shoal Blackwood Shoal
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally live in areas that have strong currents and hard substratum and typically associated with the deeper habitats of the submerged shoals and banks, and canyon features.
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF Tributary Canyons of the Arafura Depression KEF Evans Shoal Tassie Shoal Goodrich Bank
Nearshore	
Coral Reef	Within the NMR corals occur both as reefs and in non-reef coral communities. Nearshore reefs include patch reefs and fringing reefs sparsely distributed within the region. Coral reefs within the NMR provides breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks.
	Submerged coral reefs of the Gulf of Carpentaria KEF Darwin Harbour
Seagrass and Macroalgae communities	Seagrasses provide key habitats in the NMR. They stabilise coastal sediments and trap and recycle nutrients. They provide nursery grounds for commercially harvested fish and prawns and provide feeding grounds for dugongs and green turtles. Seagrass distribution in the region is largely associated with sheltered small bays and inlets including shallow waters surrounding inshore islands.
	Field Island The mainland coastline adjacent to Kakadu National Park

Habitat/Community	Location
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals, and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally inhabit areas that have strong currents and hard substratum.
	Cape Helveticus
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al., 2006). Mangroves provide habitat for waterbirds and support many commercially and recreationally important fish and crustacean species for parts of their life cycles. They buffer the coast from large tidal movements, storm surges and flooding.
	Tiwi Islands Darwin Harbour The mainland coastline adjacent to the Daly River
Sandy Beaches	Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NMR and are important for both resident and migratory seabirds and shorebirds. Sandy beaches can also provide an important habitat for turtle nesting. They are located along many coastlines of the nearshore environments of the islands and mainland shores of the NMR.
	Tiwi Islands Cobourg Peninsula Joseph Bonaparte Gulf

5. FISHES, SHARKS AND RAYS

5.1 Regional Context

Western Australian waters provide important habitat for listed fishes, sharks, and rays including areas that support key life stages such as breeding, foraging, and migration routes for fish species. Pelagic and demersal fishes occupy a range of habitats throughout each of the regions, from coral reefs to open offshore waters, and are an extremely important component of ecosystems, providing a link between primary production and higher predators, with many species being of conservation value and important for commercial and recreational fishing.

The NWMR supports a wide diversity of global fish species. Of the approximately 500 shark species found worldwide, 94 are found in the region (DEWHA, 2008). Approximately 54 species of syngnathids (seahorses, seadragons, pipehorses and pipefishes) and one species of solenostomids (ghostpipefishes) are also known to occur in the NWMR or adjacent State waters (DSEWPAC, 2012a).

The fish fauna of the SWMR includes more than 900 species occupying a large variety of habitats. However, only three species of bony fishes known to occur in the region are listed under the EPBC Act as threatened or marine species, and seven listed species of shark (DSEWPAC, 2012b).

The NMR is considered an important area for the sawfish and river shark species group, with five species of sawfishes and river sharks listed under the EPBC Act known to occur in the region (DSEWPAC, 2012c). Approximately 28 species of syngnathids and two species of solenostomids are listed marine and known to occur in the NMR, however there is a paucity of knowledge on the distribution, relative abundance and habitats of these species in the region (DEWHA, 2008).

The following sections focus on the fish species (including sharks and rays) listed as threatened or migratory that are known to occur within the NWMR. In addition, listed, conservation-dependent fish and shark species for the NWMR are described. A detailed account of commercial and recreational fisheries that operate in the region is provided in **Section 12**.

Table 5-1 outlines the threatened and migratory fish species that may or are known to occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice. **Table 5-2** includes fish species listed as conservation dependent that may occur within the NWMR, NMR and SWMR.

Table 5-1 Fish species (including sharks and rays) identified by the EPBC Act PMST that may occur within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (WA)[5]	IUCN Red List of Threatened Species (non-statutory)[6]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Migratory	Endangered	Conservation Advice *Rhincodon typus* whale shark. (Threatened Species Scientific Committee, 2015d)
Carcharias taurus	Grey nurse shark (West-coast population)	Vulnerable	N/A	Marine	Vulnerable	Critically Endangered	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DOE, 2014)
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Vulnerable	Vulnerable	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPAC, 2013b)
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Marine	Migratory	Endangered	N/A
Isurus paucus	Longfin mako	N/A	Migratory	Marine	Migratory	Endangered	N/A
Lamna nasus	Porbeagle shark Mackerel shark	N/A	Migratory	Marine	Migratory	Vulnerable	N/A
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	Critically Endangered	N/A
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	Migratory	Critically Endangered	N/A
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Critically Endangered	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Pristis pristis	Largetooth (freshwater) sawfish	Vulnerable	Migratory	Marine	Priority	Critically Endangered	
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	
Glyphis garricki	Northern river shark	Endangered	N/A	Marine	Priority	Vulnerable	
Manta alfredi	Reef manta ray	N/A	Migratory	Marine	Migratory	Vulnerable	N/A
Manta birostris	Giant manta ray	N/A	Migratory	Marine	Migratory	Endangered	N/A

[5] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[6] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

Table 5-2 EPBC Act listed Conservation Dependent species of fishes and sharks that may occur in the NWMR, NMR and SWMR

Species Name	Common Name	Likely Occurrence / Distribution	Listing Advice
Hoplostethus atlanticus	Orange roughy, Deep-sea perch, Red roughy	SWMR	No conservation listing advice for this species. Refer to the Marine bioregional plan for the SWMR (DSEWPAC, 2012b) for further information. Managed under AFMA's Orange Roughy Stock Rebuilding Strategy (AFMA, 2014)
Sphyrna lewini	Scalloped hammerhead	NWMR, NMR and SWMR[7]	Threatened Species Scientific Committee (2018)
Galeorhinus galeus	School shark, Eastern school shark, Snapper shark, Tope, Soupfin shark	SWMR	Threatened Species Scientific Committee (2009)
Centrophorus uyato	Little gulper shark	NWMR and SWMR	No conservation listing advice for this species. Refer to listing advice (Threatened Species Scientific Committee, 2013)

[7] A recurrent aggregation of scalloped hammerheads has been recorded within the Shoalwater Islands Marine Park (32° S; 115° E), 240 km south of Jurien Bay, observed from drone footage collected during the 2019 and 2020 Austral summers. The species has rarely been recorded south of Jurien Bay previously (López et al., 2022).

5.2 Protected Sharks, Sawfishes and Rays in the NWMR

The EPBC Act Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified seven species of shark and five species of river shark or sawfish listed as threatened and/or migratory within the NWMR. In addition, two species of ray (the reef manta ray and giant manta ray) are listed as migratory within the region (refer **Table 5-3**).

5.2.1 Sharks and Sawfishes

The shark species that may or are known to occur within the NWMR include: the whale shark, grey nurse shark, white shark, shortfin mako, and longfin mako (**Table 5-3**).

Five species of river shark or sawfish that may or are known to occur in the NWMR include: the narrow sawfish, northern river shark, freshwater sawfish, green sawfish and dwarf sawfish (**Table 5-3**Error! Reference source not found.).

There are identified biologically important areas (BIAs) within the NWMR for the whale shark, freshwater sawfish, green sawfish, and dwarf sawfish (**Table 5-5**).

Table 5-3 Information on the EPBC-listed threatened shark, fish and sawfish species that may or are known to occur within the NWMR.

Species	Preferred Habitat and Diet	Habitat Location
Whale shark	Preferred habitat: They have a widespread distribution in tropical and warm temperate seas, throughout oceanic and coastal Australian waters (Last and Stevens, 2009). Diet: Whale shark are planktivorous and feed on a variety of planktonic species including krill, jellyfish, and crab larvae (Last and Stevens, 2009).	Ningaloo Reef is the main known aggregation site for whale sharks in Australian waters and has the largest density of whale sharks per kilometre in the world (Martin, 2007). Acoustically tagged whale sharks have been detected on the North-west Shelf in June, July and October-January (Thomson et al. 2021). Satellite tagging and sightings of whale sharks off the Western Australian coast indicate that whilst whale sharks aggregate in higher numbers at Ningaloo Reef seasonally, they may be present year-round (Norman et al., 2017). Refer **Table 5-5** for the BIA summary for the whale shark.
Grey nurse shark (West-coast population)	Preferred habitat: Most found in temperate waters on, or close to, the bottom of the continental shelf, from close inshore to depths of about 200 m (McAuley, 2004; Kyne et al., 2021). Diet: A variety of teleost and elasmobranch fishes and some cephalopods (Gelsleichter et al., 1999; Smale, 2005).	Details of movement patterns of the western sub-population are unclear (McAuley, 2004) and key aggregation sites have not been formally identified within the NWMR (Chidlow et al., 2006). The NWMR represents the northern limit of the West-coast population. Sighting and bycatch data have indicated grey nurse sharks are present near Exmouth and Shark Bay between May - December (Hoschke et al., 2023).
White shark	Preferred habitat: The species typically occurs in temperate coastal waters between the shore and the 100 m depth contour; however, adults and juveniles have been recorded diving to depths of 1000 m (Bruce et al., 2006; Bruce, 2008). Diet: Smaller white sharks (less than 3 m length) feed primarily on teleost and elasmobranch fishes,	There are no known aggregation sites for white sharks in the NWMR, and this species is most often found south of North-west Cape, in low densities (DSEWPAC, 2012a). Given the migratory nature of the species, it most likely has a broad

Species	Preferred Habitat and Diet	Habitat Location
	broadening their diet as larger sharks to include marine mammals (Last and Stevens, 2009).	distribution within the NWMR. No BIAs identified for NWMR.
Shortfin mako	Preferred habitat: The shortfin mako shark is a pelagic species with a circumglobal, wide-ranging oceanic distribution in tropical and temperate seas (Mollet et al., 2000). Tagging studies indicate shortfin makos spend most of their time in water less than 50 m deep but with occasional dives up to 880 m (Abascal et al., 2011; Stevens et al., 2010). Satellite telemetry data suggest shortfin makos have multiple movement phases, displaying both high connectivity between Australian populations and periods of residency (Corrigan et al., 2018). Diet: Feeds on a variety of prey, such as teleost fishes, other sharks, marine mammals, and marine turtles (Campana et al., 2005).	Given the migratory nature of the species, it most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Longfin mako	Preferred habitat: A pelagic species with a wide-ranging, patchy, oceanic distribution in tropical and temperate seas (Mollet et al., 2000; Kyne et al., 2021). They have been recorded at depth ranges of 0–1,752 m (Kyne et al., 2021). Diet: Primarily teleost fishes and cephalopods (primarily squid) (Last and Stevens, 2009).	Records on longfin mako sharks are sporadic and their complete geographic range is not well known (Reardon et al., 2006). Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Mackerel/Porbeagle shark	Preferred habitat: The porbeagle shark primarily inhabits offshore waters around the edge of the continental shelf. They occasionally move into coastal waters, but these movements are temporary (Campana and Joyce, 2004; Francis et al., 2002). The porbeagle shark is known to dive to depths exceeding 1300 m (Campana et al., 2010; Saunders et al., 2011). Depth range records are 0-370 m (Kyne et al., 2021). Diet: Primarily teleost fish, elasmobranchs, and cephalopods (primarily squid) (Joyce et al., 2002; Last and Stevens, 2009).	In Australia, the species occurs in waters from southern Queensland to South-west Australia (Last and Stevens, 2009). Distribution within the NWMR is unknown, but there are several records for this species within the NWS (Atlas of Living Australia (ALA)).
Oceanic whitetip shark	Preferred habitat: The oceanic whitetip shark is globally distributed in warm-temperate and tropical oceans (Andrzejaczek et al., 2018). The species may occur in tropical and sub-tropical offshore and coastal waters around Australia. They primarily occupy pelagic waters in the upper 200 m of the water column; however, they have been observed diving to depths of around 1000 m, potentially associated with foraging behaviour (Howey-Jordan et al., 2013; D'Alberto et al., 2017). The species is highly migratory, travelling large distances between shallow reef habitats in coastal waters and oceanic waters (Howey-Jordan et al., 2013). The species does exhibit a strong preference for warm and shallow waters above 120 m. Diet: Opportunistic feeders and generally target a variety of finfishes and pelagic squid, depending on habitat. Targets pelagics such as tuna in open ocean as noted by the large bycatch numbers in the long line fisheries.	Given the migratory nature of the species, it most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Narrow sawfish	Preferred habitat[1]: Shallow coastal, estuarine, and riverine habitats, however it may occur in waters up to 40 m deep (D'Anastasi et al., 2013).	Shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens, 2009).

Species	Preferred Habitat and Diet	Habitat Location
	Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	
Northern river shark	Preferred habitat[1]: Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans et al., 2009; Thorburn and Morgan, 2004). Adults have been recorded only in marine environments. Juveniles and sub-adults have been recorded in freshwater, estuarine and marine environments (Pillans et al., 2009). Depth range of up to 23 m (Kyne et al., 2021). Diet: Variety of fish and crustaceans (Stevens et al., 2005).	The northern river shark has a relatively restricted northern Australian range (although with an extent of occurrence >20,000 km²) (Kyne et al., 2021). Within the NWMR records have come from both the West and East Kimberley, including King Sound, the Ord and King rivers, West Arm of Cambridge Gulf and also from Joseph Bonaparte Gulf (Thorburn and Morgan, 2004; Stevens et al., 2005; Thorburn, 2006; Field et al., 2008; Pillans et al., 2008, Whitty et al., 2008; Wynen et al., 2008).
Largetooth (freshwater) sawfish	Preferred habitat: Sandy or muddy bottoms of shallow coastal waters, estuaries, river mouths and freshwater rivers, and isolated water holes. Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	The largetooth sawfish has a wide Northern Australia range (Kyne et al., 2021). The Kimberley region, particularly the Fitzroy River, is identified as an important nursery site (Bateman et al. 2024). The Exmouth Gulf represents the approximate southern limit for the largetooth (freshwater) sawfish, although there are a few historical records further south (Bateman et al. 2024). Refer to **Table 5-5** for the BIA summary for the Largetooth (freshwater) sawfish.
Green sawfish	Preferred habitat[1]: Inshore coastal environments including estuaries, river mouths, embayments, and along sandy and muddy beaches, as well as offshore marine habitat (Stevens et al., 2005; Thorburn et al., 2003). They are found at depths of up to 70 m (Kyne et al., 2021). Diet: Schools of baitfish and prawns (Poganoski et al., 2002), molluscs and small crustaceans (Cliff and Wilson, 1994).	An aggregation of green sawfish (*Pristis zijsron*) has been identified in the Garig Gunak Barlu National Park (Cobourg Peninsula, NMR). Davies et al., 2022) suggests this may be a nursery area. The Ashburton River Estuary (Onslow region) has been recorded as a nursery site, with juveniles also observed along the Pilbara coast and Exmouth Gulf (Bateman et al., 2024). Refer **Table** 5-5 for the BIA summary for the green sawfish.
Dwarf sawfish	Preferred habitat[1]: Shallow (up to 20 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens et al., 2008; Kyne et al., 2015). Diet: Shoaling fish such as mullet, molluscs, and small crustaceans (Cliff and Wilson, 1994).	Literature indicates the most southern range for the dwarf sawfish is Port Hedland (Bateman et al., 2024). Refer **Table 5-5** for the BIA summary for the dwarf sawfish.

1 Preferred habitat as described within the Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b).

5.2.2 Rays

Rays are commonly found in the NWMR. Two listed and migratory species of ray are known to occur within the NWMR: the reef manta ray and giant manta ray.

No BIAs for either the reef or giant manta ray species have been identified in the NWMR.

Table 5-4 Information on migratory ray species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Reef manta ray	Preferred habitat: The reef manta ray is commonly sighted within productive nearshore environments, such as island groups, atolls or continental coastlines. However, the species has also been recorded at offshore coral reefs, rocky reefs, and seamounts (Marshall et al., 2009). Recorded depth range of 0-432 m (Kyne et al., 2021). Diet: Feed on planktonic organisms including krill and crab larvae.	A resident population of reef manta rays has been recorded at Ningaloo Reef. No BIAs identified for NWMR.
Giant manta ray	Preferred habitat: The species primarily inhabits near-shore environments along productive coastlines with regular upwelling, but they appear to be seasonal visitors to coastal or offshore sites including offshore island groups, offshore pinnacles and seamounts (Marshall et al., 2011). Recorded depth range of up to 1000 m (Kyne et al., 2021). Diet: Feed on planktonic organisms including krill and crab larvae.	The Ningaloo coast is an important area for giant manta rays from March to August (Preen et al., 1997). No BIAs identified for NWMR.

5.3 Fish, Shark and Sawfish Biological Important Areas in the NWMR

A review of The Australian Marine Spatial Information System (GA, 2024) identified Biologically Important Areas (BIAs) for four species of fish, shark and sawfish (whale shark, largetooth (freshwater) sawfish, green sawfish and dwarf sawfish) within the NWMR. The BIAs for the whale shark and the sawfish species include foraging, nursing, juvenile and pupping areas. These are described in **Table 5-5**.

Table 5-5 Fish, whale shark and sawfish BIAs within the NWMR (source: AMSIS, accessed 14/08/2024)

	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Reproduction - Pupping	Reproduction - Nursing	Juvenile	Foraging
Whale shark	✓	✓	✓	No pupping BIA identified within the NWMR	No nursing BIA identified within the NWMR	N/A	Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July) Foraging northward from Ningaloo along the 200 m isobath (July – Nov).
Green sawfish	✓	✓	-	Pupping in Cape Keraudren (pupping occurs in summer in a narrow area adjacent to shoreline) Pupping in Willie Creek Pupping in Roebuck Bay Pupping in Cape Leveque Pupping in waters adjacent to Eighty Mile Beach Pupping (likely) in Camden Sound	Nursing in Cape Keraudren Nursing in waters adjacent to Eighty Mile Beach	No juvenile BIA identified within the NWMR.	Foraging in Cape Keraudren Foraging in Roebuck Bay Foraging in Cape Leveque Foraging in Camden Sound
Largetooth (freshwater) sawfish	✓	✓	-	Pupping in the mouth of the Fitzroy River (January to May) Roebuck Bay (Jan – May) Pupping likely in waters adjacent to Eighty Mile Beach (Jan- May)	Nursing (likely) in King Sound	Waters adjacent to Eighty Mile Beach Roebuck Bay	Foraging in the mouth of the Fitzroy River (January to May) Foraging in King Sound Roebuck Bay (Jan – May) Foraging in waters adjacent to Eighty Mile Beach
Dwarf sawfish	✓	✓	-	Pupping in King Sound Pupping in waters adjacent to Eighty Mile Beach	Nursing in King Sound Nursing waters adjacent to Eighty Mile Beach	King Sound	Foraging in King Sound Foraging in Camden Sound

	Woodside Activity Area			BIAs			
	Browse	**NWS/S**	**NWC**	**Reproduction - Pupping**	**Reproduction - Nursing**	**Juvenile**	**Foraging**
							Foraging in waters adjacent to Eighty Mile Beach

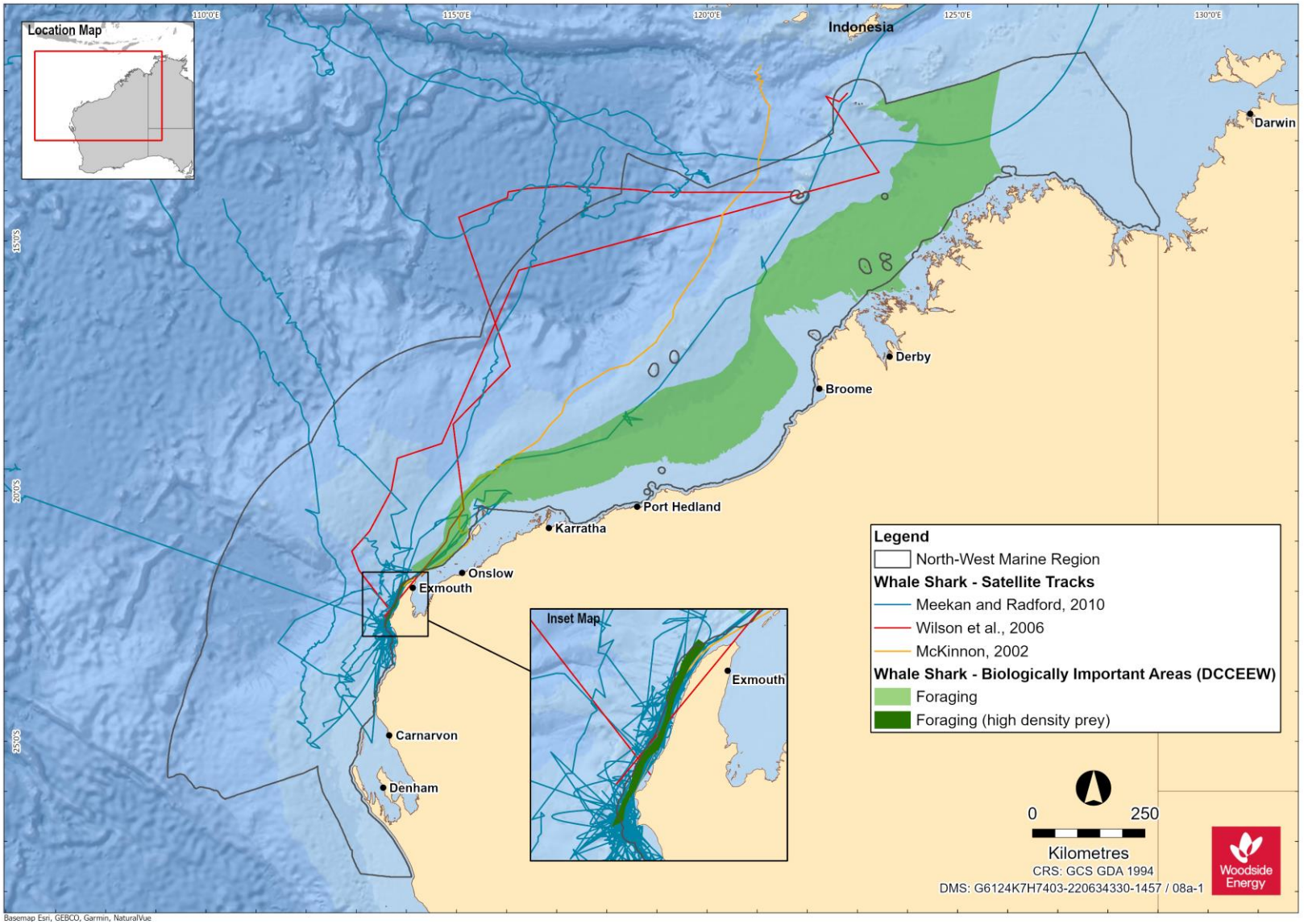


Figure 5-1 Whale shark BIAs for the NWMR and tagged whale shark satellite tracks (data source for BIAs: DCCEEW, 2024b)

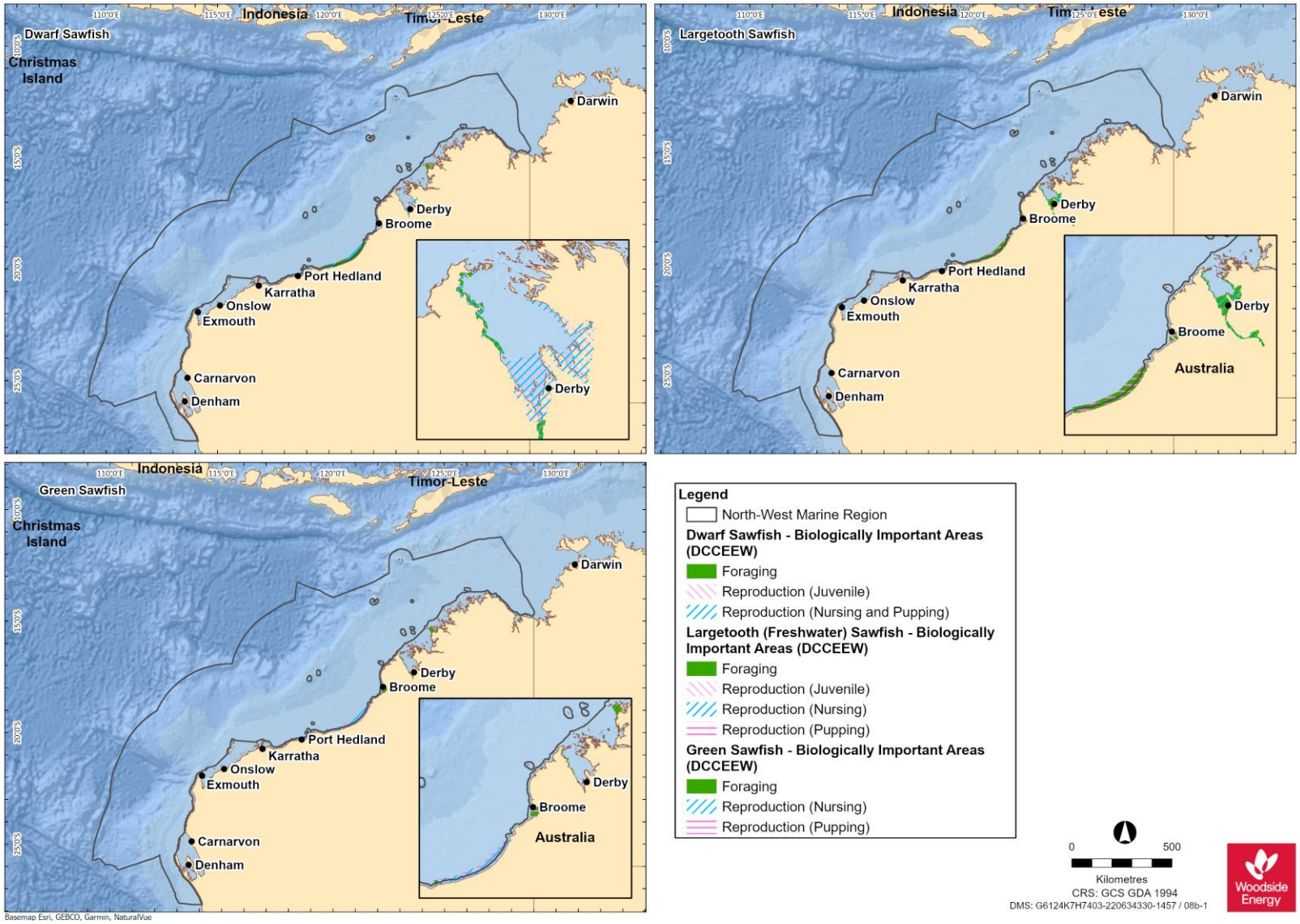


Figure 5-2 Sawfish BIAs for the NWMR (data source: DCCEEW, 2024b)

5.4 Fish Assemblages of the NWMR

5.4.1 Regional Context for Fish Assemblages of NWMR

The NWMR contains a diverse range of fishes of tropical Indo-west Pacific affinity (Allen et al., 1988). The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last et al. (2005) recorded 1,431 species from the three bioregions encompassing the continental slope, whilst also acknowledging some information gaps. A study of fish assemblages of the Dampier Archipelago found habitat type and complexity influenced fish abundance, with significantly higher abundance in mangrove and coral habitats (Moustaka, et al. 2024).

The NWMR is known for its demersal slope fish assemblages; the continental slope of the Timor Province and the North-west Transition supports more than 418 and 505 species of demersal fishes respectively, of which 64 are considered to be endemic. This is the second richest area for demersal fish species across the entire Australian continental slope. Conversely, the broad Southern Province, which covers most of southern Australia, supports 463 species withonly 26 possibly being endemic. The continental slope demersal fish assemblages of the NWMR have been identified as a KEF (DEWHA, 2008), as described in **Section 10**.

The ancient coastline at 125m depth contour KEF within the NWMR is thought to support enhanced diversity. Drivers of fish species richness, biodiversity and assemblage composition have been assessed, finding that depth, seafloor complexity and habitat type explain richness and abundance of fish assemblages (Currey- Randall et al., 2021). This study also found that fish communities along the ancient coastline KEF are similar to other mesophotic areas on the NWS. Most of the surveyed feature was characterised by soft sediment and highly mobile fish species (Currey-Randall et al., 2021).

The NWMR also features a diversity of pelagic fishes (those living in the pelagic zone) and bentho-pelagic fishes, including tuna, billfish, bramids, lutjanids, serranids and some sharks (DEWHA, 2007a). These species feed on salps and jellyfish, and more often on secondary consumers such as squid and bait fish. Water depth provides an indication of the level of interaction between pelagic and benthic communities within the NWMR; in waters deeper than 1000 m, for instance, the trophic system is pelagically-driven and benthic communities rely on particulates that fall to the seafloor (DEWHA, 2007a).

Pelagic fishes play an important ecological role within the NWMR; small pelagic fishes, such as lantern fish, inhabit a range of marine environments, including inshore and continental shelf waters and form a vital link in and between many of the region's trophic systems, feeding on pelagic phytoplankton and zooplankton and providing a food source for a wide variety of predators including large pelagic fishes, sharks, seabirds and marine mammals (Bulman, 2006; Mackie et al., 2007). Large pelagic fishes, such as tuna, mackerel, swordfish, sailfish and marlin are found mainly in oceanic waters and occasionally on the continental shelf (Brewer et al., 2007). Both juvenile and adult phases of the large pelagic species are highly mobile and have a wide geographic distribution, although the juveniles more frequently inhabit warmer or coastal waters (DEWHA, 2008).

5.4.2 Listed Fish Species in the NWMR

The family Syngnathidae is a group of bony fishes that includes seahorses, pipefishes, pipehorses and seadragons. Along with syngnathids, members of the related Solenostomidae family (ghost pipefishes) are also found in the NWMR (DSEWPAC, 2012a).

There are 55 solenostomid and syngnathid species that are listed marine species that may occur within the NWMR, although no species is currently listed as threatened or migratory, according to the PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Syngnathids live in nearshore and inner shelf habitats, usually in shallow coastal waters, among seagrasses, mangroves, coral reefs, macroalgae dominated reefs, and sand or rubble habitats (Dawson, 1985; Lourie et al., 1999, Lourie et al., 2004; Vincent, 1996). Two species, the winged seahorse (*Hippocampus alatus*) and western pipehorse (*Solegnathus sp. 2*) have been identified in deeper waters of the NWMR (up to 200 m) (DSEWPAC, 2012a), however, these species were not identified by the Protected Matters search of the NWMR.

Knowledge about the distribution, abundance and ecology of both syngnathids and solenostomids in the NWMR is limited. No BIAs for syngnathids and solenostomids have been identified in the NWMR.

5.4.3 Browse

The proposed Browse activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July - November) (**Table 9-1**)
- Largetooth (freshwater) sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the shark and sawfish species are outlined in **Table 5-5** and **Figure 5-**.

The proposed Browse activity area has partial overlap with the continental slope demersal fish communities KEF.

5.4.4 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July - November) (**Table 9-1**)
- freshwater sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the whale shark and sawfish species are outlined in **Table 5-5** and **Figure 5-**.

The NWS / Scarborough activity area has partial overlap with the continental slope demersal fish communities KEF. The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last et al., 2005).

5.4.5 North-west Cape

The North-west Cape activity area includes biologically important foraging habitat for the whale shark:

  - Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March- July) (**Table 9-1**); and
- Foraging northward from Ningaloo along the 200 m isobath (July- November) (**Table 9-1**)
  - BIAs for the whale shark are outlined in **Table 5-5** and **Figure 5-**.

The North-west Cape activity area coincides with part of the continental slope demersal fish communities KEF.

6. MARINE REPTILES

6.1 Regional Context for Marine Reptiles

The NWMR contains important habitat for listed marine reptiles, including areas that support key life stages such as nesting, internesting, migration and foraging for marine turtle species, and habitats supporting resident sea snake and crocodile populations.

Six of the seven marine turtle species occur in Australian waters, and all six (the green turtle, hawksbill turtle, loggerhead turtle, flatback turtle, leatherback turtle and olive ridley turtle) occur in the NWMR and NMR, with four species of marine turtles occurring in the SWMR (see Protected Matters reports in APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer et al., 2016), of which four are endemic to reef habitats in the remote parts of the region (see NWMR Protected Matters report in **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

There are significantly fewer marine reptile species that frequently occur within the SWMR and presently include four species of listed marine turtle and six sea snake species. Other species of sea snake may occur because of the southward-flowing Leeuwin Current as vagrants in the region (DSEWPAC, 2012b) (see SWMR Protected Matters report in **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

28 listed sea snake species ‘may’ occur in the NMR, as reported in the Protected Matters report in APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR.

The following sections focus on the listed marine reptile species known to occur within the NWMR.

Table 6-1 outlines the threatened and migratory marine reptile species that may or are known to occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 6-1 Marine reptile species identified by the EPBC Act PMST that may occur within or utilise habitats in the NWMR for key life cycle stages

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (WA)[8]	IUCN[1] Red List of Threatened Species (non-statutory)[9]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Marine	Endangered	Vulnerable	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
Chelonia mydas	Green turtle	Vulnerable	Migratory	Marine	Vulnerable	Endangered	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	Vulnerable	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	Data Deficient	
Lepidochelys olivacea	Olive Ridley turtle	Endangered	Migratory	Marine	Endangered	Vulnerable	
Varanus mitchelli	Mitchell's water monitor	Critically endangered	N/A	N/A	N/A	Critically Endangered	Conservation Advice for *Varanus mitchelli* (Mitchell's water monitor) (DCCEEW, 2023c)
Aipysurus apraefrontalis	Short-nosed sea snake	Critically endangered	N/A	Marine	Critically endangered	Data Deficient	Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Aipysurus foliosquama	Leaf-scaled sea snake	Critically endangered	N/A	Marine	Critically endangered	Data Deficient	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Aipysurus fuscus	Dusky sea snake	Under listing assessment [10]	N/A	Marine	N/A	Endangered	Conservation Advice for *Aipysurus fuscus* (dusky sea snake) (DCCEEW, 2023e)[7]
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	Migratory	Least Concern	N/A

[8] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[9] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)
[10] At time of writing (August 2024), Dusky sea snake proposed for inclusion on the EPBC Act threatened species list in the Endangered category (DCCEEW, 2023e).

6.2 Marine Turtles in the NMWR, SWMR and NMR Bioregions

According to the Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) six species of marine turtle known to occur within the NWMR are listed as threatened and migratory (three Vulnerable and three Endangered) under the EPBC Act—the green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), flatback (*Natator depressus*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtles (DSEWPAC, 2012a) (refer **Table 6-1**).

The NWMR supports globally significant breeding populations of four marine turtle species: the green, hawksbill, flatback and loggerhead turtle. Olive ridley turtles are known to forage within the NWMR, but there are only occasional records of the species nesting in the region. Leatherback turtles regularly forage over Australian continental shelf waters within the NWMR but there are also no records of the species nesting in the region (DSEWPAC, 2012a).

The six marine turtle species reported for the NWMR also occur within the NMR.

Four marine turtle species; the green, loggerhead, flatback, and leatherback turtle, have presumed feeding areas within the SWMR; however, no known nesting areas exist within the region (DSEWPAC, 2012b).

Discrete genetic stocks have evolved within each marine turtle species. This is the result of marine turtles returning to the location where they hatched. These genetically distinct stocks are defined by the presence of regional breeding aggregations. Stocks are composed of multiple rookeries in a region and are delineated by where there is little or no migration of individuals between nesting areas. Turtles from different stocks typically overlap at feeding grounds (Commonwealth of Australia, 2017). There are 17 genetic stocks across both the NWMR and NMR (nine in the NWMR, six in the NMR, and two overlapping both regions). Of these 17 genetic stocks, nine are known to occur within Woodside's three areas of activity (**Table 6-2**).

6.2.1 Life Cycle Stages

Marine turtles are highly migratory during non-reproductive life phases and have high site fidelity during breeding and nesting life phases. The majority of their lives are spent in the ocean, with only adult female marine turtles coming ashore to lay eggs in the sand above the high-water mark on natal beaches (Commonwealth of Australia, 2017). **Figure 6-1** summarises the generalised life cycle of marine turtles. Species-specific life cycle information is outlined within the Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017).

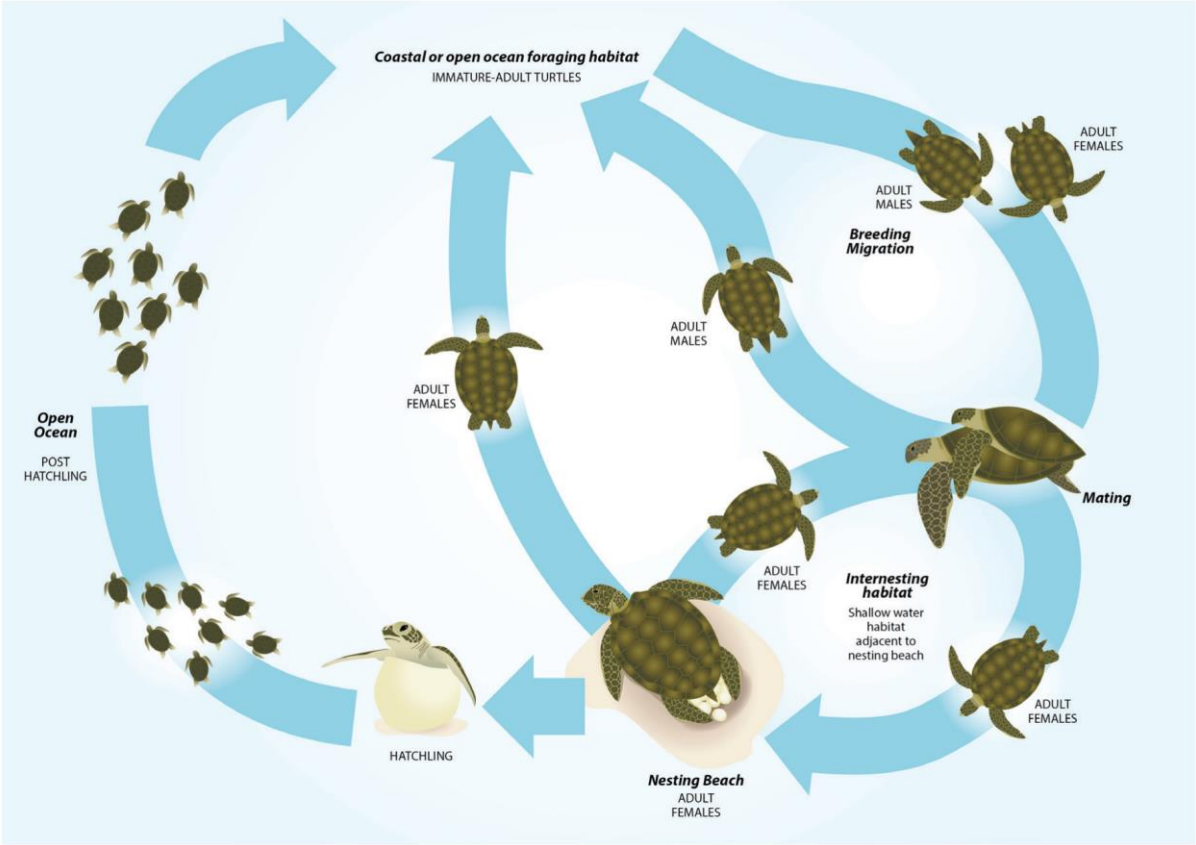


Figure 6-1 Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

6.2.2 Habitat Critical to Survival for Marine Turtles in the NWMR

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) identifies habitat critical to the survival of a species for marine turtle stocks under the EPBC Act. Habitat critical to survival is defined by the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* as areas necessary:

- for activities such as foraging, breeding or dispersal;
- for the long-term maintenance of the species (including the maintenance of species essential to the survival of the species);
- to maintain genetic diversity and long-term evolutionary development; and
- for the reintroduction of populations or recovery of the species.

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) has identified nesting locations and associated internesting areas as habitat critical to survival for four marine turtle species within the NWMR and these are identified, described and mapped in **Table 6-2** and **Figure 6-2**. No habitat critical to survival has been identified within the NWMR for olive ridley or leatherback turtles.

Table 6-2 outlines the relevant genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR.

Table 6-2 Genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Green Turtle							
NWS Stock (G-NWS)	✓	✓	✓	Adele Island Maret Island Cassini Island Lacepede Islands* Barrow Island* Montebello Islands (all with sandy beaches)* Serrurier Island Dampier Archipelago Thevenard Island Northwest Cape* Ningaloo Coast	20 km radius	Nov-Mar	Nearshore reef habitats in the photic zone.
Ashmore Reef Stock (G-AR)	✓	-	-	Ashmore Reef* Cartier Reef*		All year (peak: Dec-Jan)	
Scott Reef-Browse Island Stock (G-ScBr)	✓	-	-	Scott Reef (Sandy Islet)* Browse Island*		Nov-Mar	
Hawksbill Turtle							
Western Australia Stock (H-WA)	-	✓	-	Dampier Archipelago (including Rosemary Island and Delambre Island)* Montebello Islands (including Ah Chong Island, South East Island and Trimouille Island)* Lowendal Islands (including Varanus Island, Beacon Island and Bridled Island) Sholl Island	20 km radius	Oct-Feb	Nearshore and offshore reef habitats.

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Flatback Turtle							
Cape Domett Stock (F-CD)	✓	-	-	Cape Domett* Lacrosse Island	60 km radius	All year (peak: Jul-Sep)	Nearshore and offshore sub-tidal and soft bottomed habitats of offshore islands.
South-west Kimberley Stock (F-swKim)	-	✓	-	Eighty Mile Beach* Eco Beach* Lacepede Islands		Oct-Mar	
Pilbara Stock (F-Pil)	-	✓	-	Montebello Islands Mundabullangana Beach* Barrow Island* Cemetery Beach Dampier Archipelago (including Delambre Island* and Huay Island) Coastal islands from Cape Preston to Locker Island		Oct-Mar	
Unknown genetic stock Kimberley, Western Australia	✓	✓	-	Maret Islands Montilivet Islands Cassini Island Coronation Islands (includes Lamarck Island) Napier-Broome Bay Islands (West Governor Island, Sir Graham Moore Island – near Kalumbaru) Champagny, Darcy and Augustus Islands (Camden Sound)		May-July	

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Loggerhead Turtle							
Western Australia Stock (LH-WA)	-	-	✓	Dirk Hartog Island* Muiron Islands* Gnaraloo Bay* Ningaloo Coast	20 km radius	Nov-May	Nearshore and island coral reefs, bays and estuaries in tropical and warm temperate latitudes.

[1] *Major rookeries as outlined in the Recovery Plan (Commonwealth of Australia, 2017)*

[2] *Preferred habitat as outlined in the Recovery Plan (Commonwealth of Australia, 2017)*

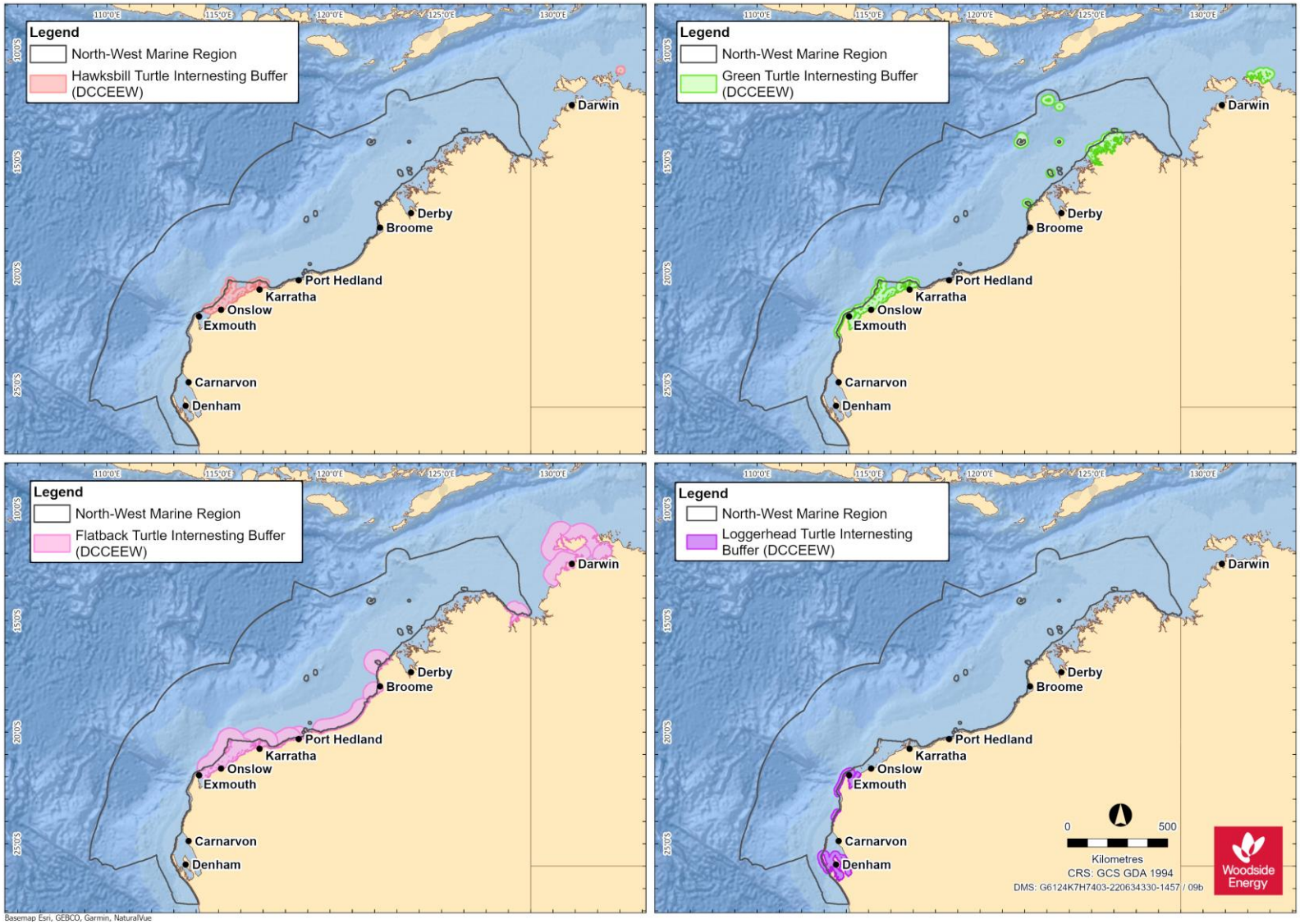


Figure 6-2 Marine turtle species habitat critical to survival (nesting beaches and internesting buffers) for the NWMR (data source: DCCEEW, 2024b)

6.3 Marine Turtle Biological Important Areas in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024), the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a) and the Recovery Plan for Marine Turtles in Australia (CoA, 2017) identified BIAs for the four marine turtle species that occur within the NWMR. These are described in **Table** 6-3**.**

Table 6-3 Marine turtle BIAs within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
Green turtle	✓	✓	✓	Barrow Island Montebello Islands (including Hermite Island, North West Island, Trimouille Island) Dampier Archipelago (islands to the west of the Burrup Peninsula) Ashmore Reef	Barrow Island Montebello Islands (including Hermite Island, North West Island, Trimouille Island) Middle Island Dampier Archipelago (islands to the west of the Burrup Peninsula) North and South Muiron Islands North West Cape Delambre Island Legendre Island and Huay Island Lacepede Islands Scott reef- Sandy Island Ashmore Reef Cartier Island Cassini Island	Locations of 20 km internesting buffer BIAs for green turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year round and seasonal 20 km internesting buffer BIAs are located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging inshore areas of Barrow Island Foraging at Montgomery Reef Foraging at Montebello Islands Foraging at Dixon Island Foraging around Ashmore Reef Foraging at Seringapatam Reef and Scott Reef Foraging in the De Grey River area to Bedout Island Foraging around the Islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around Dampier Archipelago (islands to the west of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging around Delambre Island Foraging in the Joseph Bonaparte Gulf	Migration corridor at Dampier Archipelago (islands to the west of the Burrup Peninsula). Green turtles can migrate more than 2600 km between their feeding and nesting grounds. Individual turtles foraging in the same area do not necessarily take the same migration route (Limpus et al., 1992). Ferreira et al. (2021) broadly identified two migratory corridors, one used by the NWS stock-Pilbara and another used by the NWS stock-Kimberley and the Scott-Browse stock with some overlap at the northern and southern extents respectively. This study showed that the foraging distribution of green turtles from two stocks in WA expands throughout North-west and northern Australian coastal waters, including the NT and Queensland.

[11] Migration BIA included in AMSIS (GA, 2024). General information for migratory behaviours also provided.

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
							Foraging in waters adjacent to James Price Point	
Hawksbill turtle	✓	✓	✓	Montebello Islands Barrow Island Lowendal Island Group Dampier Archipelago (to the west of the Burrup Peninsula)	Lowendal Island Group Montebello Islands (including Ah Chong and South East islands) Rosemary Island Delambre Island Barrow Island Varanus Island and Thevenard Island Dampier Archipelago (to the west of the Burrup Peninsula) Ningaloo Coast and Jurabi coast Sandy Islet at Scott Reef	Locations of 20 km internesting buffer BIAs for hawskbill turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year round and seasonal 20 km internesting buffer BIAs are located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Recent data shows foraging ranges from the north of Exmouth Gulf to offshore Broome (Fossette et al., 2021a). Foraging around the Lowendal Island group Foraging at Delambre Island Foraging around Dixon Island Foraging in the De Grey River area to Bedout Island Foraging around the islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around the islands of the Dampier Archipelago (to the west of the Burrup Peninsula) Foraging at Ashmore Reef	Migration corridor at Dampier Archipelago (islands to the West of the Burrup Peninsula). Individuals may migrate up to 2400 km between their nesting and foraging grounds (DSEWPAC, 2012a), although reproductive migration distances over 1000 km appear less common in Hawksbill turtles than other species (Fossette et al., 2021a). Recent satellite tracking data shows turtles migrating from WA rookeries remained on the continental shelf, with the majority following the coastline and dispersing in a North-easterly direction, with some turtles from the Montebello Archipelago and Lowendals moving in a South-westerly direction and some fstopping around Barrow Island. A migratory corridor was

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
								observed from Cape Preston to De Grey River (Fossette et al., 2021a)
Flatback turtle	✓	✓	-	Lacepede Islands Montebello Islands Dampier Archipelago (islands to the West of the Burrup Peninsula) Mating at Barrow Island	Thevenard Island - South coast (summer) high use on beaches with high dune height Barrow Island Montebello Islands (including Hermite Island, North West Island, Trimouille Island) Dampier Archipelago (islands to the west of the Burrup Peninsula) Delambre Island Legendre Island and Huay Island Dixon Island Intercourse Island West of Cape Lambert Various locations along the Pilbara coast between Karratha and Broome, including Cape Thouin, Mundabullangana, Cowrie Beach, Port Hedland (Cemetery Beach, Paradise Beach) and 80 Mile Beach	Locations of 80 km internesting buffer BIAs for flatback turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year-round and seasonal internesting buffer BIAs of 80 km are located around nesting sites, extending 20 km further than the habitat critical to survival. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging at the islands between Cape Preston and Onslow and inshore of Barrow Island. Foraging at Montebello Islands Foraging at Dampier Archipelago (islands to the West of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging at Delambre Island Foraging in the Joseph Bonaparte Depression Foraging in waters adjacent to James Price Point	Migration corridor at Dampier Archipelago (islands to the West of the Burrup Peninsula). The flatback turtle is a resident to Australian waters and spends 99% of its time within the Australian EEZ. A migratory corridor connects the coastlines between the Kimberley and Pilbara (Peel et al., 2024). There is evidence that some flatback turtles undertake long-distance migrations between breeding and feeding grounds (Limpus et al., 1983). However, flatback turtles generally do not have a pelagic phase to their lifecycle. Instead, hatchlings grow to maturity in shallow coastal waters thought to be close to their natal beaches (DSEWPAC, 2012a). A study predicting the dispersal of flatback turtle hatchlings found

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
					Lacepede Islands			that core areas were predominantly on the continental shelf (<200 m depth contour) during all dispersal phases, indicating that flatback turtles remain in neritic areas (Wilson et al., 2023).
Loggerhead turtle	✓	✓	-	No mating BIA identified within the NWMR	Dirk Hartog Island Muiron Islands Ningaloo and Jurabi coasts Montebello Islands Lowendal Island Rosemary Island Gnaraloo Station	Locations of 20 km internesting buffer BIAs for loggerhead turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year-round and seasonal 20 km internesting buffer BIAs are located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging in the De Grey River area to Bedout Island Foraging on the Western Joseph Bonaparte Depression Foraging in the waters adjacent to James Price Point	No migration BIA identified within the NWMR Adult loggerhead turtles dispersing from Dirk Hartog Island beaches (near Shark Bay) have remained within WA waters from southern WA to the Kimberley. Turtles dispersing from the North-west Cape–Muiron Islands nesting area have ranged north as far as the Java Sea and the North-western Gulf of Carpentaria, and to South-west WA (DSEWPAC, 2012a)
Olive ridley turtle	✓	✓	-	No mating BIA identified within the NWMR	No nesting BIA identified within the NWMR	No internesting BIA identified within the NWMR	No foraging BIA identified within the NWMR, however may forage at the following locations: The Western Joseph Bonaparte Depression and Gulf	No migration BIA identified within the NWMR. Migration routes and distances between nesting beaches and foraging areas are not

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
							Dampier Archipelago (islands to the West of the Burrup Peninsula)	known for Australian olive ridley turtles

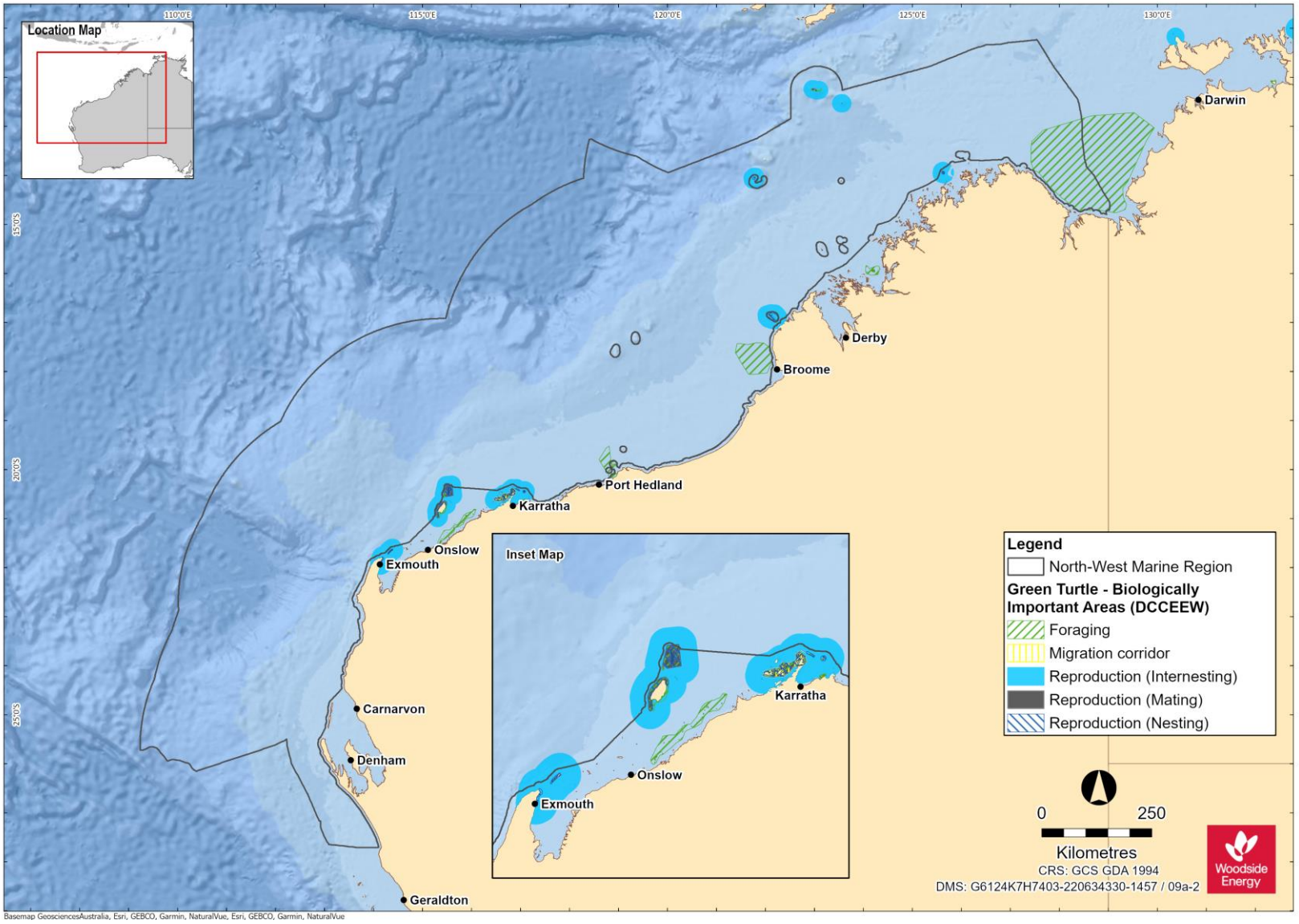


Figure 6-3 Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

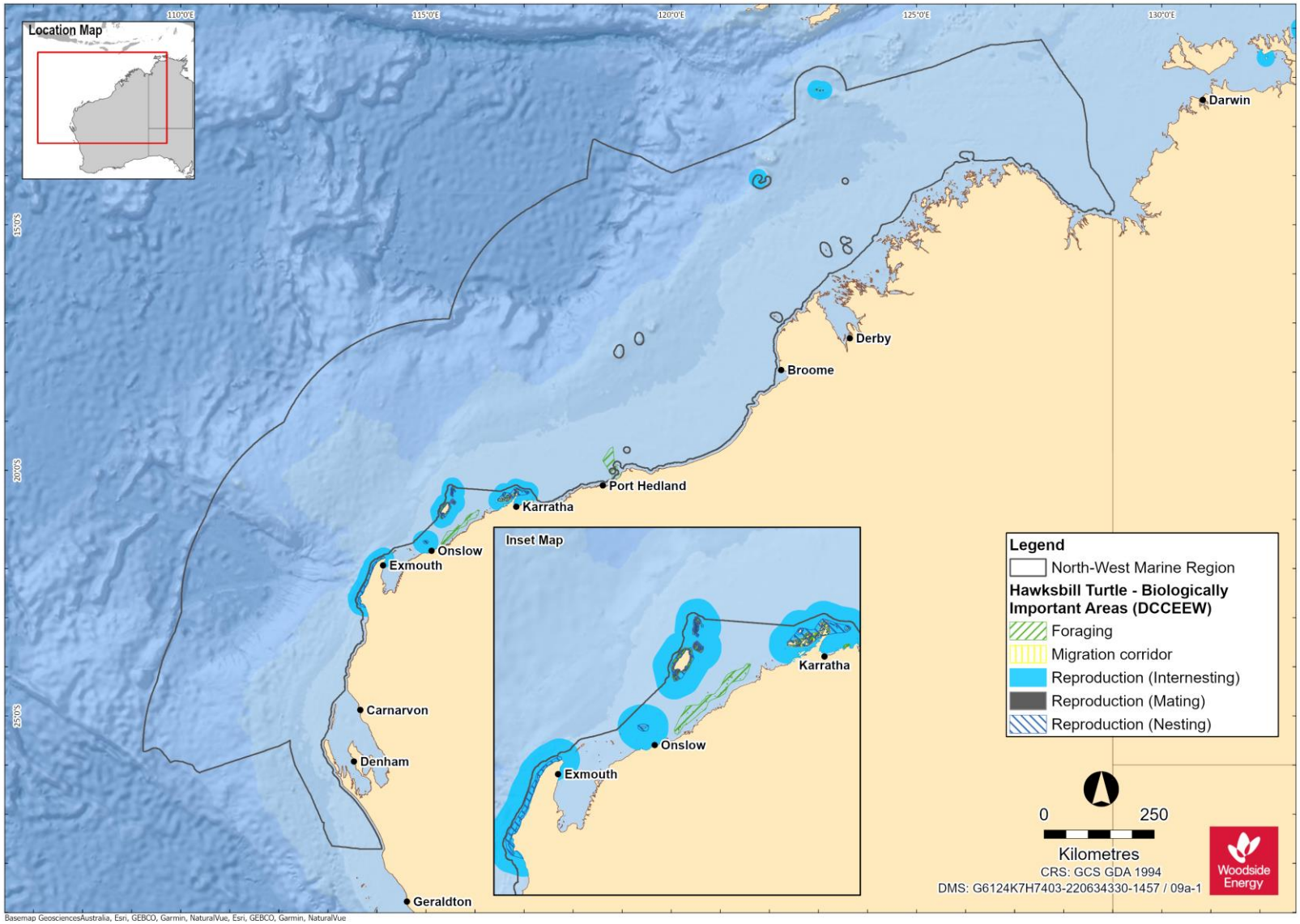


Figure - Hawksbill turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

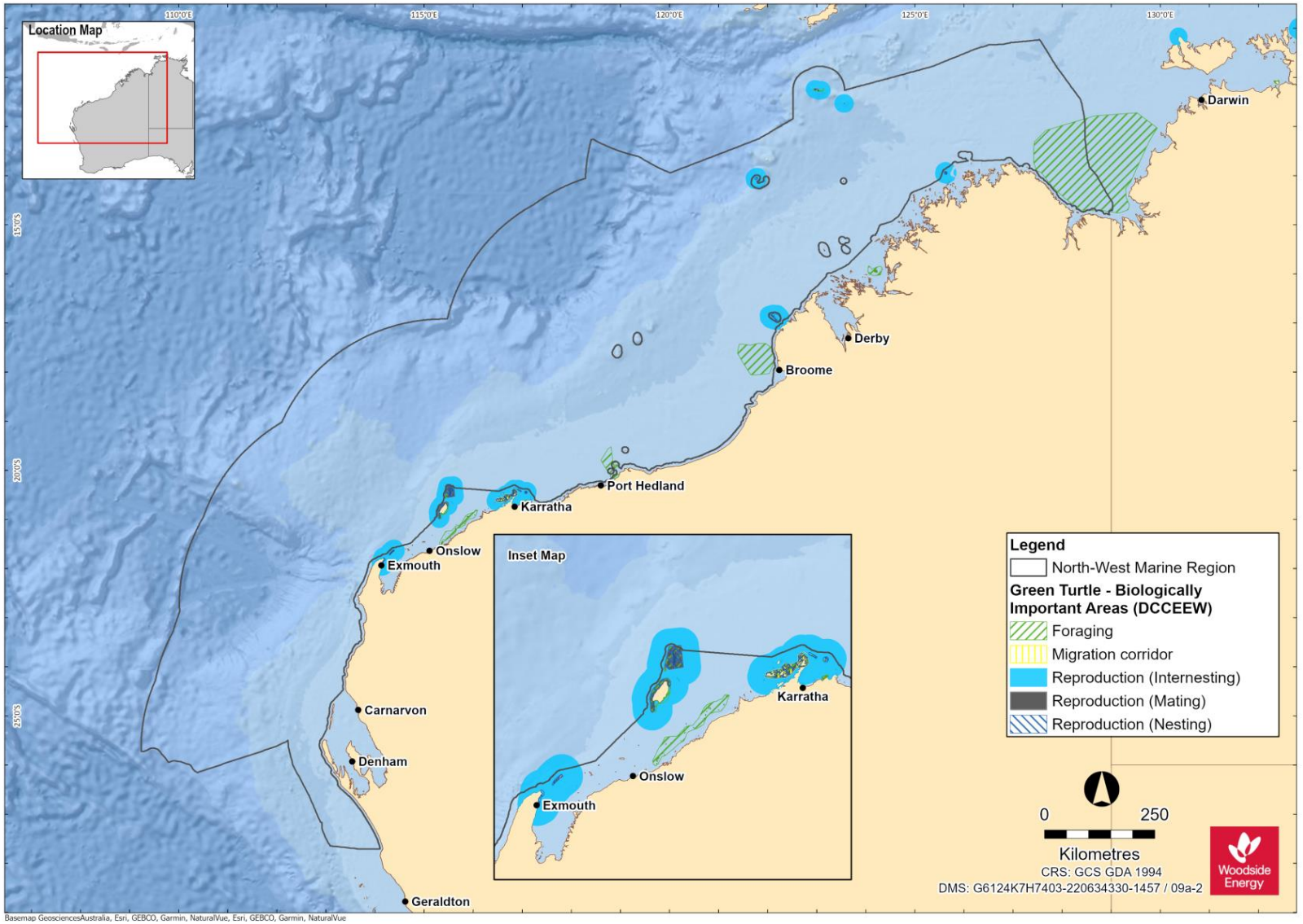


Figure 6-4 Flatback turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

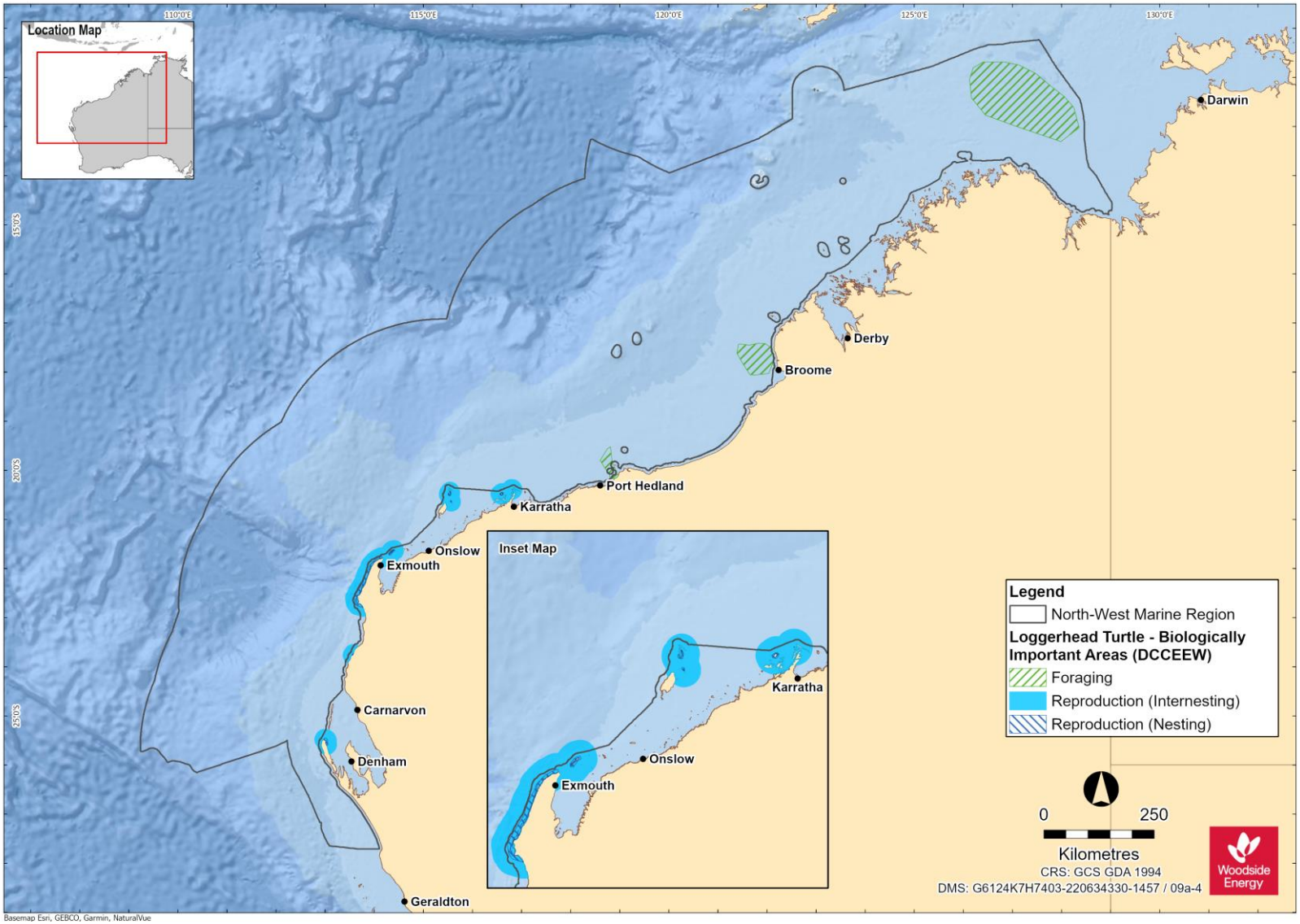


Figure 6-5 Loggerhead turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

6.4 Marine Turtle Summary for NWMR

Six of the seven marine turtle species occur within the Woodside activity areas. Across all three areas, globally significant breeding populations of four marine turtle species; the green, hawksbill, flatback and loggerhead turtle, have been recorded.

However, offshore waters do not represent biologically important habitat for marine turtles in any of the three Woodside activity areas. Isolated records of transient individuals (on post-nesting migration) are expected, but there is no evidence of important habitat or behaviours for marine turtles in the offshore, open water environment of the NWS, in general.

6.4.1 Browse

The proposed Browse activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species:

- the green turtle, including two distinct genetic stocks (Ashmore Reef and Scott Reef-Browse Island); and
- the flatback turtle, Cape Domett genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and flatback turtle are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

Table 6-4 Marine turtle key information for Browse activity area.

Species / Genetic Stock	Key Information
Green Turtle	
Ashmore Reef Stock (G-AR)	The G-AR stock nests in a localised area of the Indian Ocean in the Ashmore Reef and Cartier Island Australian Marine Park (AMP) areas. Population estimates are not available for Ashmore Reef, although annual breeding numbers are thought to be in the low hundreds (Whiting, 2000). Designated habitat critical for the G-AR stock are the nesting locations of Ashmore Reef and Cartier Reef, and an internesting buffer of 20 km radius around these rookeries, year-round with peak internesting activity occurring December to January (refer Table 6 of the Recovery Plan). Juvenile and adult turtles forage within the tidal/sub-tidal habitats of offshore islands and coastal waters with coral reef, mangrove, sand, rocky reefs, and mudflats where there are algal turfs or seagrass meadows present (Commonwealth of Australia, 2017).
Scott Reef-Browse Island Stock (G-ScBr)	The G-ScBr stock is a discrete unit known to nest at only two locations within the North-east Indian Ocean—Sandy Islet and Browse Island. There is currently very limited data available for the G-ScBr stock, therefore population numbers are not known. Designated habitat critical for the G-ScBr stock are the nesting locations of Sandy Islet and Browse Island, and an internesting buffer of 20 km radius around these rookeries, for the period November to March (refer Table 6 of the Recovery Plan). Surveys conducted at Scott Reef in 2006, 2008 and 2009 indicate that the summer months from late November to February are the preferred breeding season for green turtles at Sandy Islet (Guinea, 2009). Satellite tagging studies (Pendoley, 2005; Guinea, 2011) have provided an indication of the behaviour and migratory routes of adult green turtles leaving Scott Reef. Most animals appear to swim through South Reef lagoon and disperse toward the Western Australian mainland via two distinct post-nesting migration pathways; travelling east and north toward the Bonaparte Archipelago and then north along the coast to foraging areas in NT waters or travelling south to Cape Leveque and then south along the coast to the Turtle Islands off the mouth of the De Grey River in the Pilbara region (Ferreira et al., 2021).

Species / Genetic Stock	Key Information
Flatback Turtle	
Cape Domett Stock (F-CD)	Cape Domett is an important high density nesting area (Tucker et al., 2021). Combined with a smaller site at Lacrosse Island, the F-CD stock is one of the largest flatback turtle stocks in Australia. Average nesting abundance at Cape Domett is estimated at 3,250 females per year (Whiting et al., 2008). Designated habitat critical for the F-CD stock are the nesting locations of Cape Domett and Lacrosse Island, and an internesting buffer of 60 km radius around these rookeries, year-round with peak internesting activity occurring July to September. Extending further than the habitat critical internesting buffer, an internesting buffer BIA of 80 km is located at Cape Domett and Lacrosse Island.

6.4.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes major nesting areas that support globally significant breeding populations of three marine turtle species, representing four discreet genetic stocks:

- the green turtle, NWS genetic stock;
- the hawksbill turtle, WA genetic stock; and
- the flatback turtle, South-west Kimberley stock and Pilbara genetic stock.

Locations of habitat critical for each of the four species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green, hawksbill, and flatback turtles are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

Table 6-5 Marine turtle key information for NWS / Scarborough activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the NWS stock within the NWS / Scarborough activity area are located at Lacepede Islands, Montebello Islands, Barrow Island (Tucker *et.al.*, 2021), Bells Beach, Delambre Island, Mundabullangana, Port Hedland, and Thevenard Island. These areas are designated habitat critical for survival of the stock and include an internesting buffer of 20 km radius around these rookeries fromNovember to March.
Hawksbill Turtle	
Western Australia Stock (H-WA)	The H-WA stock is the largest in the Indian Ocean. The majority of the nesting for this stock is located in the Pilbara. The Dampier Archipelago has the largest nesting aggregation recorded. In particular, Rosemary Island supports the most significant hawksbill turtle rookery in the WA region and one of the largest in the Indian Ocean; approximately 500-1000 females nest on the island annually, more than at any other WA rookery (Pendoley, 2005; Pendoley et al., 2016). Major rookeries of the H-WA stock within the NWS / Scarborough activity area are located at Rosemary Island, Delambre Island and the Montebello Islands. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries fromOctober to February.
Flatback Turtle	
South-west Kimberley Stock (F-swKim)	The genetic relationship between this nesting aggregation and the Cape Domett and Pilbara stocks is currently under review. Population numbers of the F-swKim stock are unknown. Major rookeries of the F-swKim stock are located at Eighty Mile Beach and Eco Beach. These areas are designated habitat critical for the stock and include an internesting buffer of 60 km radius around these rookeries from October to March.
Pilbara Stock (F-Pil)	The extent of genetic relatedness of flatback turtles along the WA coast is currently under review. Population numbers of the F-Pil stock are unknown.

Species / Genetic Stock	Key Information
	This stock nests on many islands in the Pilbara and southern Kimberley, with major rookeries at Mundabullangana Beach, Delambre Island, Rosemary Island and Barrow Island. These areas are designated habitat critical for the F-Pil stock and include an internesting buffer of 60 km radius around these rookeries fromOctober to March. A study using aerial photogrammetry showed nesting beaches were spread across the Pilbara from Y Island (Exmouth Gulf) in the southwest, to Bedout Island in the north and Mulla Mulla Downs Creek in the east (Fossete et al., 2021b). Other large flatback rookeries include Legendre Island and Thevenard Island. The Dampier Archipelago has been identified as a high-use area for flatback nesting (i.e., > 50% of the stock) (Fossete et al., 2021b). Extending further than the habitat critical internesting buffer, a year-round internesting buffer BIA of 80 km is located north and north-west of the Montebello Islands. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical internesting buffer is the legally recognised area of protection under the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. Post-nesting satellite tracking indicates foraging occurs along the WA coast in water shallower than 130 m and within 315 km of shore (Commonwealth of Australia, 2017). Flatbacks exhibit high fidelity to nesting beaches during periods of nesting attempts (Peel et al., 2024).

6.4.3 North-west Cape

The North-west Cape activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species, representing two discreet genetic stocks:

- the green turtle, NWS genetic stock; and
- the loggerhead turtle, Western Australia genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and loggerhead turtles are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

A 2018 survey, including on-beach monitoring of the Muiron Islands and Ningaloo Coast from North-west Cape to Bungelup (Rob et al., 2019), supports the concept that North-west Cape and the Muiron Islands are major important nesting areas for green and loggerhead turtles, as identified in the Recovery Plan (Commonwealth of Australia, 2017).

Table 6-6 Marine turtle key information for North-west Cape activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). There is one major rookery of the G-NWS stock located within the North-west Cape activity area. Located on the mainland coast of the North-west Cape, this area is designated habitat critical for the stock and includes an internesting buffer of 20 km radius around the rookery from November to March. For the 2022-23 Ningaloo Turtle Program season, green turtles were the most active species in the NW Cape division, with 91.2% of total turtle activity (DBCA, 2023a). The number of green turtle nests has varied largely among years since commencement of the program in 2002 (range of 1.06 to 18.13 nests per subsection per day) with an average of 5.69. The average number of green turtle nests in the 2022-23 peak season were below average, with 4.07 nests per subsection per day (DBCA, 2023a). There have been two clear peaks (2011-12 and 2020-21) in activity since the beginning of the Ningaloo Turtle Program, where activity has been approximately 2.5 to 11 times greater than other seasons (DBCA, 2023a). Both seasons coincided with La Niña weather patterns (DBCA, 2021a).
Loggerhead Turtle	
Western Australia Stock (LH-WA)	The LH-WA stock is one of the largest in the world (Limpus, 2009). The trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the LH-WA stock are located at Dirk Hartog Island, Muiron Islands and Gnaraloo Bay. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries fromNovember to May. Dirk Hartog Island in the Shark Bay Marine Park, with an average of 122 nests per day over 2.1 km (Reinhold and Whiting, 2014), is recognised as the most important loggerhead turtle rookery in WA (Commonwealth of Australia, 2016; as cited in Rob et al., 2019). The standardised level of loggerhead turtle nesting along the North-west Cape was above the long-term average (0.36) for the 2022-23 season and the third highest since the Ningaloo Turtle Program began (2002), with 0.46 nests per subsection per day (DBCA, 2021a).

6.5 Sea Snakes

Sea snakes are commonly found in the NWMR and NMR, but less so in the SWMR, and occupy three broad habitat types: shallow water coral reef and seagrass habitats, deepwater soft bottom habitats away from reefs, and surface water pelagic habitats (Guinea, 2007a).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer et al., 2016), of which four are endemic to reef habitats in the remote parts of the region:

- dusky sea snake (*Aipysurus fuscus*);
- large headed sea snake (*Hydrophis pacificus*);
- short-nosed sea snake (*Aipysurus apraefrontalis*); and
- leaf-scaled sea snake (*Aipysurus foliosquama*).

The short-nosed sea snake and the leaf-scaled sea snake are listed threatened species (Critically Endangered) under the EPBC Act and the dusky sea snake is currently under assessment for inclusion on the EPBC Act threatened species list as Endangered (**Table 6-7**).

The Kimberley coast has the world's highest diversity of sea snakes, supporting over one third of all known species (Somaweera and Saunders, 2015). There is currently limited knowledge about the ranges and distribution patterns of sea snake species in the NWMR, in addition to a lack of understanding of population status and threats. Recent findings of *A. apraefrontalis* and *A. foliosquama* in locations outside of their previously defined ranges have highlighted the lack of information on species distributions in the NWMR (Udyawer et al., 2016). Udyawer et al. (2020) used a correlative modelling approach to understand habitat associations and identify suitable habitats for five sea snake species (*A. apraefrontalis, A. foliosquama, A. fuscus, A. l. pooleorum* and *A. tenuis*). Species-specific habitat suitability was modelled across 804,244 km^2 of coastal waters along the NWS, and the resulting habitat suitability maps enabled the identification of key locations of suitable habitat for these five species (refer **Table 6-6**).

No habitat critical to survival or BIAs for sea snake species have been identified in the NWMR. While the Ashmore Reef and Cartier Island AMPs have been recognised for their high diversity and density of sea snakes (DSEWPAC, 2012a), surveys have revealed a steep decline in sea snake numbers at Ashmore Reef (Guinea, 2007b; Lukoschek et al., 2013). Leaf-scaled and short-nosed sea snakes have been absent from surveys at Ashmore Reef since 2001, despite an increase in survey intensity (Guinea, 2006, 2007b; Guinea and Whiting, 2005; Lukoschek et al., 2013). The reason for the decline is unknown.

Table 6-7 Information on the two threatened sea snake species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Short-nosed sea snake	Preferred habitat: Primarily on reef flats or in shallow waters of outer reef edges to depths of 10 m (Minton et al., 1975). Typically, movement is restricted to within 50 m of reef flat habitat (Guinea and Whiting, 2005). Diet: Primarily fishes and eels.	The short-nosed sea snake has been recorded from Exmouth Gulf to the reefs of the Sahul Shelf, although most records come from Ashmore and Hibernia reefs (Guinea and Whiting, 2005). Key locations of suitable habitat: Ashmore Reef, Exmouth Gulf and coral habitat fringing the Muiron Islands and the Montebello Islands (Udyawer et al., 2020).
Leaf-scaled sea snake	Preferred habitat: The leaf-scaled sea snake occurs in shallow protected areas of reef flats, typically in water depth less than 10 m. Diet: Primarily shallow water coral-associated wrasse, gudgeons, clinids and eels (McCosker, 1975; Voris, 1972; Voris and Voris, 1983).	The leaf-scaled sea snake has only been recorded at Ashmore and Hibernia reefs (Guinea and Whiting, 2005), indicating it has a very limited distribution. Key locations of suitable habitat: Ashmore Reef, Shark Bay, Exmouth Gulf, Barrow Island and Montebello Islands (Udyawer et al., 2020).

6.6 Crocodiles

The salt-water crocodile (*Crocodylus porosus*) is a listed migratory species under the EPBC Act known to occur within the NWMR. The species is found in most major river systems of the Kimberley, including the Ord, Patrick, Forrest, Durack, King, Pentecost, Prince Regent, Lawley, Mitchell, Hunter, Roe and Glenelg rivers. The largest populations occur in the rivers draining into the Cambridge Gulf and the Prince Regent River and Roe River systems. There have also been isolated records in rivers of the Pilbara region, around Derby near Broome and as far south as Carnarvon on the mid-west coast. No BIAs for salt-water crocodile have been identified in the NWMR.

6.7 Water Monitor

Mitchell's water monitor (*Varanus mitchelli*) is listed as critically endangered under the EPBC Act. The species is known to occur in wetlands and coastal floodplains in the northern extent of the NWMR, with distribution from Yampi Sound Training Area, across the Kimberley and into the Top End of the Northern Territory and far northwest Queensland (DCCEEW, 2023c). The species inhabits freshwater and saline wetlands that range from seasonal gorges in upper catchments to large rivers and coastal floodplains. It has been recorded in rivers, creeks, riffle zones, gorges, springs, lagoons, swamps, mangroves, and foreshores (DCCEEW, 2023c).

Habitat critical to the survival of the species has not been mapped however includes all areas where the species persists following the establishment of cane toads and areas within known distribution where habitat occurs or can be restored (terrestrial) (DCCEEW, 2023c). No BIAs for Mitchell's water monitor have been identified in the NWMR.

7. MARINE MAMMALS

7.1 Regional Context

The offshore waters of WA include important habitat for marine mammals, including areas that support key life stages such as breeding, calving, foraging, and migration. Of the 45 species of cetacean occurring in Australian waters, 27 species occur regularly in the waters of the NWMR, nine species in the waters of the NMR and 33 species in the SWMR. The waters of the NWMR and the NMR support globally significant dugong populations (DSEWPAC, 2012a, 2012c).

The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters of the NWMR for several cetacean species (DSEWPAC, 2012a). Numerous large mysticetes (baleen whale) species, in particular the humpback whale, are known to utilise the region for migration and calving, and the pygmy blue whale is known to utilise the region for foraging and as a migration pathway between southern feeding and northern breeding/feeding areas north of the equator.

The SWMR is an important area for numerous marine mammal species including pinniped species, large, migratory whale species and resident coastal whale and dolphin species (DSEWPAC, 2012b).

The NMR and adjacent areas are important for several species of cetacean, particularly inshore dolphin species. These species, and other marine mammals, rely on the waters of the NMR and adjacent coastal areas for breeding and foraging (DSEWPAC, 2012c).

Table 7-1 outlines the threatened and migratory marine mammal species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 7-1 Marine mammal species identified by the EPBC Act PMST that may occur within the NWMR.

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[12]	IUCN Red List of Threatened Species (non-statutory)[13]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Cetaceans - Mysticeti							
Balaenoptera musculus	Blue whale	Endangered	Migratory	Cetacean	Endangered	Endangered	Conservation Management Plan for the Blue Whale - A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015-2025 (Commonwealth of Australia, 2015a)
Eubalaena australis	Southern right whale	Endangered	Migratory	Cetacean	Vulnerable	Least Concern	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW, 2024a)
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Endangered	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Cetacean	Conservation dependent	Least Concern	Listing Advice *Megaptera novaeangliae* Humpback Whale (DAWE, 2022)
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Cetacean	Endangered	Vulnerable	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Cetacean	Migratory	Least Concern	N/A
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Cetacean	Migratory	Near Threatened	N/A
Balaenoptera omurai	Omura's whale	N/A	N/A	Cetacean	N/A	Data Deficient	N/A
Cetaceans - Odontoceti							
Physeter macrocephalus	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	Vulnerable	N/A
Orcinus orca	Killer whale	N/A	Migratory	Cetacean	Migratory	Data Deficient	N/A

[12] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)

[13] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[12]	IUCN Red List of Threatened Species (non-statutory)[13]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Orcaella heinsohni	Australian snubfin dolphin	N/A	Migratory	Cetacean	Priority	Vulnerable	N/A
Sousa chinensis	Indo-Pacific humpback dolphin (Australian humpback dolphin)	N/A	Migratory	Cetacean	Priority	Vulnerable	N/A
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/ Timor Sea populations)	N/A	Migratory	Cetacean	N/A	N/A	N/A
Sirenians and Pinnipeds							
Dugong dugon	Dugong	N/A	Migratory	Marine	Migratory	Vulnerable	N/A
Neophoca cinerea	Australian sea lion	Endangered	N/A	Marine	Endangered	Endangered	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPAC, 2013a) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)

7.2 Cetaceans in the NWMR

Cetaceans are generally widely distributed and highly mobile. In general, distribution patterns reflect seasonal feeding and breeding areas, characterised by high productivity, and migration routes associated with reproductive patterns. The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters for several cetacean species (DSEWPAC, 2012a).

From the Protected Matters search, 34 EPBC Act listed species were recorded as potentially occurring or having habitat within the NWMR (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). Of those, 12 cetacean species are listed as threatened and/or migratory, including baleen whales, toothed whales and dolphins that occur within the NWMR (**Table 7-2**).

7.3 Dugongs in the NWMR

The dugong is listed as migratory under the EPBC Act. Dugongs inhabit seagrass meadows in coastal waters, estuarine creeks and streams, and reef systems (DSEWPAC, 2012a).

Some of the coastal waters adjacent to the NWMR support significant populations of dugongs, including Shark Bay, Exmouth Gulf, in and adjacent to Ningaloo Reef, in coastal waters along the Kimberley coast, and on the edge of the continental shelf at Ashmore Reef (DEWHA, 2008).

Although the patterns of dugong movement in WA are not well understood, it is thought that dugongs move in response to availability of seagrass (Marsh et al., 1994; Preen et al., 1997) and water temperature. Cleguer and Marsh (2023) present the most contemporary data on dugongs and population estimates via an inventory of dugong aerial surveys of Australia, including northwest Australia (Shark Bay, Ningaloo, Exmouth Gulf and Pilbara, the Kimberley Region).

There are a number of BIAs for dugong within and adjacent to waters of the NWMR (refer **Section 7.5**).

7.4 Pinnipeds in the NWMR

The Australian sea lion is listed as a species that may occur or may have habitat within the NWMR (Protected Matters search - **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). It is included here as the Australian sea lion is the only pinniped endemic to Australia (Strahan, 1983) and has been recorded within the southern extent of the NWMR at Shark Bay, WA (Kirkwood et al., 1992). The most northern known breeding colony is at the Houtman Abrolhos Islands in the SWMR. The Australian sea lion's breeding range extends from the Houtman Abrolhos Islands, WA to The Pages Island, east of Kangaroo Island, SA. The Australian sea lion was listed as endangered in 2020 (Threatened Species Scientific Committee, 2020a). An assessment of the status and trends in abundance of this endemic, coastal pinniped species (Goldsworthy et al. 2021) documented an overall reduction in pup abundance over three generations, providing strong evidence that the species meets IUCN endangered criteria.

There are no BIAs for the Australian sea lion in the NWMR.

7.5 Marine Mammals in the NWMR

Marine mammal descriptions within the NWMR including baleen whales, toothed whales and dolphins and dugongs are presented in **Table 7-2**.

Table 7-2 Information on the threatened/migratory marine mammal species within the NWMR

Species	Key Information
Baleen whales (Mysticeti) – Low Frequency hearing	
Humpback whale	In Australian waters, there are two genetically distinct populations of humpback whales that migrate annually along the west (Group IV/ Group D) and east (Group V) coasts between May and November (Jenner et al., 2001), The population of humpback whales (*Megaptera novaeangliae*) known as Group IV/D migrate annually from Antarctic feeding grounds passing along the coast of Western Australia to warm tropical waters including the Kimberley, North West Cape, and Exmouth Gulf for breeding and calving (Russell et al*.,* 2024). The biannual migration of humpback whales through the NWMR occurs in winter (June to August) for northbound migrating whales and southbound in early spring (September to November). Population data for the West Australian sub-population is considerably variable (DAWE, 2022). The population has been increasing in size at a rate of approximately 10% per annum since the cessation of whaling in Western Australian waters by 1963 (Thums et al., 2018) and population numbers have increased from approximately 2,000 to 3,000 individuals in 1991 to between 19,200–33,850 individuals in 2008 (Bannister and Hedley, 2001; Bejder et al., 2019; Hedley et al., 2011). Aerial surveys off the WA coast undertaken between 2000 and 2008 produced a population estimate for the Group IV population of 26,100 individuals (Salgado Kent et al., 2012) and the predicted increasing trend in abundance predicted by modelling (Thums et al., 2018). The International Whaling Commission (IWC) estimated that in 2012 the Western Australian subpopulation had recovered to 90% (74-98% 90% PI) of its pre-whaling levels and projected that by 2020 it would have reached 98% (88-100% PI) (IWC 2015 cited in (DAWE, 2022)). Due to the unprecedented population recovery the humpback whale was removed from the EPBC Act threatened species list as it was deemed no longer eligible for inclusion (DAWE, 2022) after a previous listing as Vulnerable for many decades. The Group IV population migrates northward from their Antarctic feeding grounds around May each year, reaching the NWMR around early June. The southward migration subsequently starts in mid-September, after time for breeding and calving (typically within August and September) (Threatened Species Scientific Committee, 2015b). Within the NWMR there are key calving areas between Broome and the northern end of Camden Sound, and resting areas in the southern Kimberley region, Exmouth Gulf and Shark Bay. In particular, high numbers of humpback whales are observed in Camden Sound and Pender Bay from June to September each year (Threatened Species Scientific Committee, 2015b) and as far south as Gourdon Bay in the Kimberley (Thums et al., 2018). There are reports of neonates present further south, suggesting that the calving areas may be poorly defined, expanding or returning to pre-whaling patterns as the population recovers. Aerial photogrammetric surveys in 2013 and 2015 recorded large numbers of humpback whale calves along the North-west Cape, with estimated minimum relative calf abundance of 463–603 in 2013 and 557–725 in 2015 (Irvine et al*.*, 2018). The majority of calves sighted in both years (85% in 2013; 94% in 2015) were neonates, and these observations indicate that a minimum of approximately 20% of the expected number of calves of this population are born near, or south of the North-west Cape. Thus, the calving grounds for the Group IV population extend south from Camden Sound to at least North-west Cape, 1000 km South-west of the currently recognized calving area (Irvine et al*.*, 2018) and further south, as reported for Geographe Bay and Flinders Bay (in July and August) in south-west, Western Australia (Jolliffe et al. 2024). The seasonal presence of humpback whales is presented in **Table 9-1**. Migration, breeding and calving BIAs for the humpback whale within the NWMR are presented in **Table 7-3**and **Figure 7-2**.
Blue whale	There are two recognised sub-species of blue whale in the Southern Hemisphere, both of which are recorded in Australian waters. These are the southern (or 'true') blue whale (*Balaenoptera musculus*) and the 'pygmy' blue whale (*Balaenoptera musculus brevicauda*) (Commonwealth of Australia, 2015a). In general, southern blue whales occur in waters south of 60°S and pygmy blue whales occur in waters north of 55°S (i.e, not in the Antarctic). On this basis, it is reasonably assumed all blue whales sighted in the NWMR are likely to be pygmy blue whales. The migratory population, known as the East Indian Ocean (EIO) pygmy blue whale population, migrate biannually through the NWMR. This population is seasonally distributed from Indonesia (a potential breeding ground) to south-west of Australia and east across the Great Australian Bight and Bonney Upwelling to beyond the Bass Strait (Blue Planet Marine, 2020 and McCauley et al*.* (2018)). Migration seems to be variable, with some individuals appearing as resident to areas of high productivity and others undertaking migrations across long distances (Commonwealth of Australia, 2015a). McCauley et al*.* (2018) describe three migratory stages around Australia for the EIO pygmy blue whale population, based on collated passive acoustic

Species	Key Information
	data: a 'southbound migratory stage' where whales travel southwards from Indonesian waters offshore from the WA coastline, mostly from October to December but possibly into January of the following year; a protracted 'southern Australian stage' (January to June) where animals spread across southern waters of the Indian Ocean and south of Australia (with movement as far south as the Southern Subtropical Convergence Zone); and a 'northbound migratory stage' (April to August) where animals travel north back to Indonesia again. Extensive passive acoustic monitoring throughout the NWMR indicates migratory timing and distribution of pygmy blue whales (noting this survey method detects vocalising whales): • Acoustic monitoring conducted by McCauley and Jenner (2010) in the Exmouth and northern Montebello Islands region identified a peak period in the northern migration of pygmy blue whales from April to August, and from November through to late December during the southern migration. • Northbound migration between mid-April and early August and southbound migration between October to December and possibly into January for the Scott Reef area 2006-2009 (McCauley 2011) (noting the absence of any southbound detection in 2007). • Noise loggers deployed for a full year period in 2019 detected pygmy blue whales on their northern and southern migration. The noise loggers were located at various locations ~40–50 km west of the project area, and in ~ 1300 m water depth. The majority of pygmy blue whales detected on their northern migration occurred from mid-April to the end July, then again on their southern migration in November through to early-December (Chevron Australia, 2019) • Gavrilov et al. (2018) analysed acoustic data from an array of ocean bottom seismographs (recorded in December 2014) to detect pygmy blue whales and showed the southbound migration was over an extended offshore corridor traversing an area up to 400 km to the northwest of the North-west Cape. • A targeted passive acoustic monitoring program to detect southbound migratory pygmy blue whales ran from late October 2021 to March 2022 with a deepwater ALTO lander (900 m depth) to the west of the Montebello Trough and C-lander (190 m depth) at the outer edge of the NWS (Warren et al. 2023). Despite vessel noise dominating low frequencies throughout the recording periods at both recording locations, pygmy blue whale song vocalisations and D-calls were detected from the start of the recording period through November and early December 2021. • An offshore trial of Distributed Acoustic Sensing (DAS) using fibre optic cables (submarine telecommunications cable) to detect low-frequency whales recorded vocalising pygmy blue whales within 12 km detection range within a 50 km long area on the outer edge of NWS (Debens et al. 2024). Pygmy blue whale detections were made from mid-November (commencement of the trial) through to mid-December 2023 and a couple of detections in early January 2024. The first satellite tracks of pygmy blue whales for this population documented northbound migration between Western Australia and Indonesia (Double et al. 2014) and identified areas where whales had highest occupancy, such as Perth Canyon, Naturalist Plateau, North-west Cape region and the Banda Sea. Pygmy blue whales tagged in the Bonney Upwelling region of South Australia in 2015 showed that most of the tagged whales remained in South Australian waters during the tracking period but one documented the migration to Indonesia via Western Australian waters and a return journey (albeit via intermittent data) of the southbound migration to the southern coast of Western Australia (Möller et al., 2020). Thums et.al. (2022) used passive acoustic monitoring and satellite telemetry data (a combination of existing data and tag tracking data collected for Western Australia 2019-2022) to assess the spatial extent of the distribution, migration and foraging areas for pygmy blue whales in the South-east Indian Ocean associated with the northbound migrationThe tag tracking results highlighted extensive use of slope habitat off Western Australia and minimal use of shelf habitat by pygmy blue whales. Additionally, pygmy blue whales off Western Australia were mostly engaged in migration, with short periods of foraging. Whale density was highest in the southern part of the North-west Australian coast and whales were there between April-June, and November-December. This study also compared foraging and migration areas to described areas of importance (BIAs), some aligned such as migratory BIA for northbound pygmy blue whales whilst some had less than 10% overlap (Thums et al*.,* 2022). The timing, distribution and behaviour of southbound pygmy blue whales is less well documented with reference to satellite tagging. Limited tagged whale data from Double et al. (2014), Möller et al. (2020) and Thums et al. (2022) indicated connectivity of migrating pygmy blue whales from South Australia through Western Australia to and back from Indonesia. Mustika et al. (2024), satellite tag tracking data for two southbound pygmy blue whales (tagged in Indonesia) suggest varying migratory

Species	Key Information
	pathways from the Savu Sea to subantarctic waters as well as extended time in the Southern Subtropical Convergence Zone. One tagged whale traversed a migratory path through offshore waters of Western Australia towards Heard and McDonalds Islands covering a distance of almost 6,000 km and travelling at 100 km per day. In contrast a second tagged whale took a migratory journey similar to the documented northbound route to the North-west Cape before heading out into offshore waters and spending time in the Subantarctic Front before looping back up through the Perth Canyon, North-west Cape and towards Savu Sea (Mustika et al., 2024). There is currently insufficient data to accurately estimate population numbers of the pygmy blue whale in Australian waters (Blue Planet Marine, 2020; Commonwealth of Australia, 2015a). There are, however, two estimates of population size of the EIO pygmy blue whale for WA. McCauley and Jenner (2010) calculated the population to be between 662 and 1559 individuals in 2004 based on passive acoustics (whale vocalisations), and Jenner et al. (2008) (based on photographic mark and recapture) calculated between 712 and 1754 individuals, but both estimates did not account for animals travelling further west into the Indian Ocean (McCauley et al., 2018). More recent passive acoustic data estimates a 4.3% growth rate that applies to the proportion of EIO pygmy blue whales seasonally present in offshore water off south-eastern Australia and may not reflect the full population but does imply an increasing population (McCauley et al., 2018). Thums et al., (2022) identified the most important foraging (and/ or resting/ breeding) areas from south to north as: (1) the Perth Canyon and vicinity; (2) the shelf edge off Geraldton; (3) the shelf edge from Ningaloo Reef to the Rowley Shoals (not continuous) and including a couple of small areas near the shelf edge off approx. 25ºS; and (4) the Banda Sea. The Foraging BIA off the South-west of Western Australia encompassed 83% of the most important areas in that region (Thums et al., 2022). The pygmy blue whale is typically present in the Perth Canyon from November to June, with an observed peak between March and May (Commonwealth of Australia, 2015a; Blue Planet Marine, 2020). The pygmy blue whale feeds in the Perth Canyon at depths of 200 to 300 m, which overlaps the typical distribution of krill (200–500 m water depth (day) to surface (night)) (McCauley et al., 2004; Commonwealth of Australia, 2015a). Other possible feeding grounds off the WA coast include the wider area around the Perth Canyon, and possible foraging areas off the Ningaloo Coast and at Scott Reef (Commonwealth of Australia, 2015a). The seasonal presence of pygmy blue whales is presented in **Table 9-1.** Refer **Table 7-3** and **Figure 7-4** for the location and type of BIAs for blue whales in the NWMR. There is a migratory BIA for the pygmy blue whale within WA waters, which extends for most of the length of the NWMR within offshore waters.
Bryde's whale	The Bryde's whale is the least migratory of its genus and is restricted geographically from the equator to approximately 40°N and S, or the 20° isotherm (Bannister et al., 1996). The species is known to exhibit inshore and offshore forms varying in morphology and migratory behaviours in other international locations (Bannister et al., 1996). This appears to also be the case within Australian waters. Bryde's whales have been identified as occurring in both oceanic and inshore waters, with the only key localities recognised in WA being in the Houtman Abrolhos Islands and north of Shark Bay (Bannister et al., 1996). Data suggests offshore whales migrate seasonally, heading towards warmer tropical waters during the winter; however, information about migration within the NWMR is not well known (McCauley and Duncan, 2011). McCauley (2011b) detected Bryde's whales using acoustic loggers deployed in and around Scott Reef from 2006 to 2009. Other acoustic logger data of Bryde's whale vocalisations recorded between Ningaloo and north of Darwin showed no apparent trends or seasonality (McCauley, 2011a). There are no identified BIAs for this species in the NWMR.
Southern right whale	The southern right whale occurs primarily in waters between about 20°S and 60°S and moves from high latitude feeding grounds in summer to warmer, low latitude, coastal locations in winter (Bannister et al., 1996). Two populations of southern right whale occur in Australian waters: the western and eastern (DCCEEW, 2024a). Southern right whales in Australian waters predominantly occur in aggregations in coastal water reproductive areas where they calve and nurse their young from May to October, primarily occupying shallow waters (< 10m depth) within 1 km of the coastline (Charlton et al., 2019 and Smith et al., 2022; cited in DCCEEW, 2024a). Peak period of abundance is late July to August, with seasonal variability. Females accompanied by a calf generally occupy the calving ground for 2 to 3 months between June and September (DCCEEW, 2024a). For the western population, breeding occurs in Exmouth Gulf and in calving areas along the south coast of WA outside of the NWMR (DCCEEW, 2023). A stranding record exists for the far north Kimberley coast (ALA, 2006). Known females have rarely been observed on the Australian coastline in the year prior to

Species	Key Information
	calving, suggesting mating and conception may predominantly occur away from calving grounds, potentially on feeding grounds (Watson et al., 2021 cited in DCCEEW, 2024a). There is a significant energetic cost to the mother in the late stages of gestation (i.e. last trimester) and calf growth rate has been found to be dependent on the maternal body size and condition of the mother (Christiansen et al. 2018 and Christiansen et al. 2022 cited in DCCEEW, 2024a). Foraging ecology of southern right whales is poorly understood and observations of foraging whales are rare (DCCEEW, 2024a). There is evidence of a population increase of the western population, whereas there is greater uncertainty of the population status and trends of the eastern population (DCCEEW, 2024a). Southern right whale abundance in Australian waters is still far below estimated historic abundance (>20%) (DCCEEW, 2024a). There is a reproduction BIA and habitat critical to survival (HCTS) for the southern right whale located within Exmouth Gulf (DCCEEW, 2024a). A migration BIA extends 3 nautical miles out from the coastline from Ningaloo and spans down the Western Australian coastline and across the south and south-east coast of Australia (DCCEEW, 2024a). Nursing and calving behaviours are known to occur within reproductive BIAs. HCTS for the southern right whale has been identified as all reproductive BIAs across the species range (DCCEEW, 2024a). Refer Figure 7-1 and **Section 7.6** for HCTS for southern right whale in the NWMR. Refer to **Table 7-3** and **Figure 7-5** for BIAs for southern right whales in the NWMR
Antarctic minke whale	The Antarctic minke whale have a circumpolar distribution south of 60°S during summer (Risch et al., 2019) and has been recorded off all Australian States (apart from the NT) in winter (refer to DCCEWE SPRAT profile). Their seasonal distribution and migration patterns are poorly understood (Risch et al., 2019). The species is highly associated with sea ice and feeds in cold Antarctic waters over the summer. It is thought that the Antarctic minke whale migrates through offshore waters of Western Australia to about 20°S to feed and possibly breed (Bannister et al., 1996). Information about timing and distribution, behaviour (migration and breeding) within the NWMR, however, is presently not known. In the high latitudinal winter breeding grounds in other regions, the species appears to be distributed off the continental shelf edge. No population estimates are available for Antarctic minke whales in Australian waters. Acoustic detection has been recorded for the Perth Canyon and Exmouth Plateau (McCauley, 2011) and more recently acoustic detection indicated presence in offshore waters of NWS in late October and all of November and was absent (based on no vocalisation and detection) in December 2021 to March 2022 (over a monitoring period from October 2021 to March 2022) (Warren et al., 2023)). There are no identified BIAs for this species in the NWMR.
Sei whale	The sei whale is a baleen whale with a worldwide oceanic distribution and is expected to seasonally migrate between low latitude wintering areas and high latitude summer feeding grounds (Bannister et al., 1996; Prieto et al., 2012). There are no known mating or calving areas in Australian waters. The species has a preference for deep waters, typically occurs in oceanic basins and continental slopes (Prieto et al., 2012), and exhibits a migration pathway influenced by seasonal feeding and breeding patterns. Sei whales have been infrequently recorded in Australian waters (Bannister et al., 1996). Reliable estimates of the sei whale population size in Australian waters are currently not possible due to a lack of dedicated surveys and their elusive characteristics. Similarly, the extent of occurrence and area of occupancy of sei whales in Australian waters cannot be calculated due to the rarity of sighting records. They will typically travel in small pods of three to five individuals, with some segregation by age, sex and reproductive status. Calving grounds are presumed to exist in low latitudes with mating and calving potentially occurring during winter months (Threatened Species Scientific Committee, 2015a). There are no known mating or calving areas in Australian waters, and there are no identified BIAs for this species in the NWMR.
Fin whale	The fin whale is a large baleen whale distributed worldwide. Fin whales migrate annually between high latitude summer feeding grounds and lower latitude over-wintering areas (Bannister et al., 1996) and follow oceanic migration paths. The species is uncommonly encountered in coastal or continental shelf waters. Australian Antarctic waters are important feeding grounds for fin whales but there are no known mating or calving areas in Australian waters (Morrice et al., 2004). The species has been observed in groups of six to 10 individuals, as well as in pairs and alone (Threatened Species Scientific Committee, 2015c). Accurate distribution patterns are not known within Australian waters and the majority of data is from stranding events. Fin whales have been recorded vocalising off the Perth Canyon, WA, between January and April 2000 (McCauley et al., 2000). It is currently not possible to accurately estimate the population size of fin whales in Australian waters predominantly due to the species' behaviour and local ecology, as

Species	Key Information
	the proportion of time they spend at the surface varies greatly depending on these factors. In addition, natural fluctuations of fin whales in Australian waters are unknown; however, long-range movements do appear to be prey-related (Aulich et al., 2022). A recent study by Aulich et al. (2022) used passive acoustic monitoring as a tool to identify the migratory movements of fin whales in Australian waters. On the west coast, the earliest arrival of these animals from Antarctica occurred at Cape Leeuwin in April, and between May and October they migrated along the WA coastline to the Perth Canyon, which likely acts as a feeding zone for migratory whales (Aulich et al., 2022). Some whales were found to continue migrating northwards along the WA coastline with vocalisation presence recorded as far north as Dampier between August and late October (Aulich et al., 2022). There are no identified BIAs for this species in the NWMR.
Omura's whale	Omura's whale is a species of baleen whale that was first described in 2003. Previously specimens of Omura's whale were identified as pygmy/dwarf Bryde's whales, however morphological and molecular evidence identified Omura's whale as a distinct species not closely related to Bryde's whale in 2003 (Ottewell et al., 2016). It was believed that the range of Omura's whale was restricted to the eastern Indo-Pacific, however recent discoveries suggest the species may have a more widespread distribution (Ottewell et al., 2016; Cerchio et al, 2019). In Australia, presence of this species was confirmed in 2015 when, what was later determined to be an Omura's whale, was stranded on the northwest coast of Australia, near Exmouth (Ottewell et al., 2016). An in-depth review conducted by Cerchio et al. (2019) concluded that Omura's whale can primarily be found in tropical and warm-temperate waters and is currently known from all ocean basins excluding the central and eastern Pacific. Further, a strong tendency toward a coastal and neritic water distribution was found, although there were several pelagic water records, the majority of which were on the continental shelf and within shallow seas throughout the documented range (Cerchio et al, 2019). Omura's whales were detected by passive acoustic monitoring: • Warren et al. (2023) targeted passive acoustic monitoring program to detect southbound migratory pygmy blue whales ran from late October 2021 to March 2022 with a deepwater ALTO lander (900 m depth) to the west of the Montebello Trough and C-lander (190 m depth) at the outer edge of the NWS. Calls of the Omura's whales were detected at both recording locations throughout the recording period. Detections were, however, more common at the deeper water location, in terms of both number of detection days and number of detection hours per day (Warren et al., 2023). The shelf edge location showed Omura's present primary in December, however this lander malfunctioned and stopped recording in mid-January 2022. • An offshore trial of Distributed Acoustic Sensing (DAS) using fibre optic cables (submarine telecommunications cable) to detect low-frequency whales recorded vocalising Omura's whales within 12 km detection range along a 50 km long area on the outer edge of NWS (Debens et al. 2024). Omura's whale detections were made from at the beginning of December 2023 through to mid-January 2024 (and the end of the trial). Currently little is known about the ecology and lifestyle characteristics of Omura's whale resulting in an IUCN listing of Data Deficient. There are no identified BIAs for this species in the NWMR.
Toothed whales (Odontoceti) – High Frequency hearing	
Sperm whale	Sperm whales are the largest of the toothed whales and are distributed worldwide in deep waters (greater than 200 m) off continental shelves and sometimes near shelf edges (Bannister et al., 1996). The species tends to inhabit offshore areas at depths of 600 m or more and is uncommon in waters less than 300 m deep (Ceccarelli et al., 2011). There is limited information about sperm whale distribution in Australian waters, however, they are usually found in deep offshore waters, with more dense populations close to continental shelves and canyons. In the open ocean, there is a generalised movement of sperm whales southwards in summer, and corresponding movement northwards in winter, particularly for males. Detailed information about the distribution and migration patterns of sperm whales off the WA coast is not available. Females with young may reside within the NWMR all year round, males may migrate through the region and the species may be associated with canyon habitats (Ceccarelli et al., 2011). Sperm whales have been recorded in deep waters off North-west Cape and appear to occasionally venture into shallower waters in other areas. 23 sightings of sperm whales (variable pod sizes, ranging from one to six animals) were recorded by marine mammal observers (MMOs) during the North-west Cape MC3D marine seismic survey (December 2016 to April 2017) (Woodside, 2020). These animals were observed in deep, continental slope

Species	Key Information
	waters of the Montebello Saddle (maximum distance of approximately 90 km from North-west Cape), and the waters overlying the Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF. The deep waters above the gully/saddle on the inner edge of the plateau (the Montebello Saddle) are thought to be important for sperm whales that may feed in the region (based on 19th Century whaling records; Townsend, 1935). Recent studies such as acoustic detection indicated sperm whale presence in deep, offshore waters but not at the edge of the NWS (over a monitoring period of October 2021 to March 2022, for the deepwater location). However, while sperm whales were detected every month, occurring in bouts, there was no evidence for lasting use of the area around this recording location (Warren et al., 2023), Ferriera et al. (2024) reported sperm whale sightings off the North-west Cape in May 2023. A total of 26 individual sperm whales were sighted about 30 km offshore in groups up to ten individuals. The sperm whales were observed displaying surface logging behaviour with frequent and numerous blows prior to flukes up dives (indicative of deep feeding behaviour). Such aggregations appear to be an annual occurrence and at the same time as migratory pygmy blue whale feed and move through the same area, to the west and offshore of Ningaloo and North-west Cape. There are no identified BIAs for this species in the NWMR.
Orca (killer whale)	The preferred habitat of killer whales includes oceanic, pelagic and neritic (relatively shallow waters over the continental shelf) regions, in both warm and cold waters. Killer whales appear to be more common in cold, deep waters; however, they have been observed along the continental slope and shelf, particularly near seal colonies, as well as in shallow coastal areas of WA (Bannister et al., 1996; Thiele and Gill, 1999). The total number of killer whales in Australian waters is unknown, however, it may be that the total number of mature animals within waters around the continent is less than 10,000. Killer whales are known to make seasonal movements, and probably follow regular migratory routes, but no information is available for the species in Australian waters. Killer whales are top-level carnivores, and there are reports from around Australia of attacks on dolphins, juvenile humpback whales, blue whales, sperm whales, dugongs and Australian sea lions (Bannister et al., 1996). Killer whales are known to target humpback whales, particularly calves, off Ningaloo Reef during the humpback southern migration season (Pitman et al., 2015). Overall, observations suggest that humpback calves are a predictable, plentiful, and readily taken prey source for killer whales off Ningaloo Reef for at least five months of the year. Additionally, there are records of killer whales attacking dugongs in Shark Bay (Anderson and Prince, 1985). However, there are no recognised key localities or important habitats for killer whales within the NWMR (DSEWPAC, 2012a). There are no identified BIAs for this species in the NWMR.
Australian snubfin dolphin	Stranding and museum specimen records indicate that Australian snubfin dolphins occur only in waters off northern Australia, from approximately Broome on the west coast to the Brisbane River on the east coast (Parra et al., 2002). Aerial and boat-based surveys indicate that Australian snubfin dolphins occur mostly in protected shallow waters close to the coast, and close to river and creek mouths (Parra, 2006; Parra et al., 2006; Parra et al., 2002). Within the NWMR, this species has been found in the shallow coastal waters and estuaries along the Kimberley coast. Beagle and Pender bays on the Dampier Peninsula, and tidal creeks around Yampi Sound and between Kuri Bay and Cape Londonderry are important areas for Australian snubfin dolphins (DEWHA, 2008). Roebuck Bay has generally been considered the south-western limit of snubfin dolphin distribution across northern Australia, but the species has been recorded in Port Hedland harbour, the Dampier Archipelago, Montebello Islands, Exmouth Gulf and off North-west Cape (Allen et al., 2012). Roebuck Bay supports one of the largest known populations of Australian snubfin dolphins (D'Cruz et al., 2022). A first comprehensive catalogue of snubfin dolphin sightings has been compiled for the Kimberley, north-west Western Australia (Bouchet et al. 2021) and documented that snubfin dolphins are consistently encountered in shallow water (<21 m depth) close to (<15 km) freshwater inputs with high detection rates in known hotspots such as Roebuck Bay and Cygnet Bay as well as suitable coastal habitat in the wider Kimberley region. Refer **Table 7-3** and **Figure 7-6** for the location and type of BIAs for Australian snubfin dolphins in the NWMR.
Indo-Pacific humpback dolphin (Australian humpback dolphin)	Previously included with *Sousa chinensis*, the Australian humpback dolphin (*S. sahulensis*) was elevated to a species in 2014. *S. chinensis* is now applied for humpback dolphins in the eastern Indian and western Pacific Oceans and *S. sahulensis* for humpback dolphins in the waters of the Sahul Shelf from northern Australia to southern New Guinea (Jefferson and Rosenbaum, 2014). The Australian humpback dolphin is listed as *S. chinensis* under the EPBC Act. The Australian humpback dolphin (referred to as 'humpback dolphin' hereafter) inhabits the tropical/subtropical waters of the Sahul Shelf across northern Australia and southern Papua New Guinea (Jefferson and Rosenbaum, 2014). Based on historical stranding data, museum specimens and

Species	Key Information
	opportunistic sightings collected during aerial and boat-based surveys for other fauna it has been inferred that humpback dolphins occur from the WA/NT border south-west to Shark Bay (Hanf et al., 2016). Allen et al. (2012) suggested that humpback dolphins use a range of inshore habitats, including both clear and turbid coastal waters across northern WA. The waters surrounding North-west Cape are an important area for the species. Boat-based surveys up to 5 km out from the coast (Brown et al., 2012) recorded humpback dolphins from 0.3 to 4.5 km away from shore and in depths ranging from 1.2 to 20 m, with a mean of ~8 m. Other studies around North-west Cape, surveying waters up to 5 km from the coast, recorded humpback dolphins in water depths of up to 40 m (Hanf et al., 2016). Based on density, site fidelity and residence patterns, North-west Cape is clearly an important habitat toward the south-western limit of this species' range (Hunt et al., 2017). Humpback dolphins do not appear to undergo large-scale seasonal migrations, although seasonal shifts in abundance have been observed (Parra & Cagnazzi 2016 cited in DCCEEW, 2023a). Aerial transect surveys conducted in the Kimberley region show the abundance for humpback dolphins was estimated to be 1,546 in 2016 and 2,690 in 2017 (Raudino et al., 2023). Dolphin densities were greatest in inshore waters, with greatest densities in Exmouth Gulf, Dampier Archipelago, and Great Sandy Islets (Raudino et al., 2023). Aerial surveys targeting dugongs over the western Pilbara have recorded humpback dolphins more than 60 km from the mainland in shallow shelf waters (i.e. <30 m deep) near Barrow Island and the western Lowendal Islands (Hanf, 2015). The species has also been recorded in fringing coral reef and shallow, sheltered sandy lagoons at the Montebello Islands (Raudino et al., 2018). Over the past ten years a number of studies have focused on populations of humpback dolphins along the Kimberley coast, including Roebuck Bay, the Dampier Peninsula, Cone Bay, Yampi Sound, Prince Regent River and the Cambridge Gulf (Brown et al., 2016). Refer **Table 7-3** and **Figure 7-7** for the location and type of BIAs for Indo-Pacific humpback dolphins in the NWMR.
Indo-Pacific bottlenose dolphin (Spotted bottlenose dolphin)	There are four known sub-populations of spotted bottlenose dolphins, of which the Arafura/Timor Sea populations were identified as potentially occurring within the NWMR. The species is restricted to inshore areas such as bays and estuaries, nearshore waters, open coast environments, and shallow offshore waters including coastal areas around oceanic islands, from Shark Bay to the western edge of the Gulf of Carpentaria. The species forages in a range of habitats but is generally restricted to water depths of less than 200 m (DSEWPAC, 2012a). Important foraging/breeding areas include the shallow coastal waters and estuaries along the Kimberley coast and Roebuck Bay. Aerial transect surveys conducted in the Kimberley region showed the abundance for the bottlenose dolphins has been declining with estimated abundance of 3,713 in 2015, 2,638 in 2016 and 1,635 in 2017. Dolphin densities were greatest in inshore waters, with greatest densities in Exmouth Gulf, Dampier Archipelago, and Great Sandy Islets (Raudino et al., 2023). A study at North-west Cape (NWC) found that during Winter months, presence in coastal lagoons west of the NWC was more likely than other seasons. In spring, probability of spotted bottlenose dolphin occurrence was higher outside of the Ningaloo Marine Park (noting summer data was not included in this study) (Haughey et al. 2021). Refer **Table 7-3** and **Figure -** the location and type of BIAs for spotted bottlenose dolphins in the NWMR.
Sirenians	
Dugong	Dugongs are distributed along the WA coast throughout the Gascoyne, Pilbara and Kimberley. Specific areas supporting dugong populations include: Shark Bay; Ningaloo and Exmouth Gulf; the Pilbara coast (Exmouth Gulf to De Grey River [Marsh et al., 2002]); and Eighty Mile Beach and the Kimberley coast, including Roebuck Bay (Brown et al., 2014). Dugong distribution is correlated with the seagrass habitats upon which it feeds, although water temperature has also been correlated with dugong movements and distribution (Preen et al., 1997; Preen, 2004). Dugongs are known to migrate between seagrass habitats (hundreds of kilometres) (Sheppard et al., 2006), and in Shark Bay they exhibit seasonal movements as a behavioural thermoregulatory response to winter water temperatures (Holley et al., 2006; Marsh et al., 2011). Abundance aerial surveys have been conducted in Australian dugong habitat areas since the early 1980s. These surveys indicate that dugong populations are now stable at a regional scale in Shark Bay and in the Exmouth and Ningaloo Reef area. The entire Kimberley region has only been surveyed in 2015 and 2017, so only baseline information on dugong distribution and abundance is available for this area (Cleguer & Marsh, 2023). Refer **Table 7-3** and **Figure 7-8** for the location and type of BIAs for dugong in the NWMR.

Species	Key Information
Pinnipeds	
Australian sea lion	The Australian sea lion is the only endemic pinniped (true seals, fur seals and sea lions) in Australian waters. It is a member of the Otariidae (eared seals) family. The birth interval in Australian sea lions is around 17–18 months. The Australian sea lion is unique among pinnipeds in being the only species that has a non-annual breeding cycle that is also temporally asynchronous across its range (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). This means the breeding period (copulation and birthing) in one colony will occur at different times to breeding in another colony. The Australian sea lion is a specialised benthic forager—that is, it feeds primarily on the sea floor. Studies have shown that the species will eat a range of prey, including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobsters and penguins (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). The Australian sea lion feeds on the continental shelf, most commonly in depths of 20–100 m, and they typically travel up to about 60 km from their colony on each foraging trip, with a maximum distance of around 190 km when over shelf waters. The current breeding distribution of the Australian sea lion extends from the Houtman Abrolhos Islands on the west coast of WA to the Pages Islands in SA. Sites for the 58 breeding colonies occurring in WA and SA are designated as habitat critical to the survival of the species under the Recovery Plan for the Australian sea lion (DSEWPAC, 2013a). Of these, four are located in the SWMR along the west coast of WA: Abrolhos Islands (Easter Group), Beagle Island, North Fisherman Island and Buller Island. There are also a number of foraging BIAs for both males and females along the west coast, extending from the Abrolhos Islands south to Rockingham. There is no designated habitat critical to survival or identified BIAs for this species in the NWMR. **Figure 7-9** shows the foraging BIAs for the Australian sea lion to the south of the NWMR in the northern extent of the SWMR.

7.6 Habitat Critical to the Survival for Marine Mammals in the NWMR

The southern right whale is the only marine mammal which has habitat critical to the survival (HCTS) of a species defined.

The National Recovery Plan for the Southern Right Whale (DCCEEW, 2024a) identifies HCTS under the EPBC Act. The *EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance 2013* state that "An action is likely to have a significant impact on a threatened species if there is a real chance or possibility that it will: adversely affect habitat critical to the survival of a species." The definition of HCTS for a species are areas necessary:

- for activities such as foraging, breeding, roosting, or dispersal,
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators),
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

HCTS for the southern right whale has been identified as all reproductive BIAs across the species range (**Figure 7-1**). The identification of HCTS reflects that southern right whales display strong site fidelity to calving areas in Australian coastal waters, within and between years, over decadal time spans (Bannister, 2001; Charlton et al. 2021 and Watson et al. 2021 cited in DCCEEW, 2024a). Reproductive areas have been identified as HCTS for the species: [:

- they meet the species' essential life cycle requirements for reproduction (e.g., mating, calving, and nursing) and reproduction is known to occur at that location,
- there is a level of occupancy by individual breeding females at these locations of multiple days in any given year, and across multiple years, for long-term maintenance of the species, and
- they are critical for recovery of the southern right whale in terms of expanding habitat occupancy and contributing to the maintenance of genetic diversity as site fidelity may lead to small-scale genetic differences.

No 'Critical Habitat' as defined under section 207A of the EPBC Act has been identified for the southern right whale (DCCEEW, 2024a).

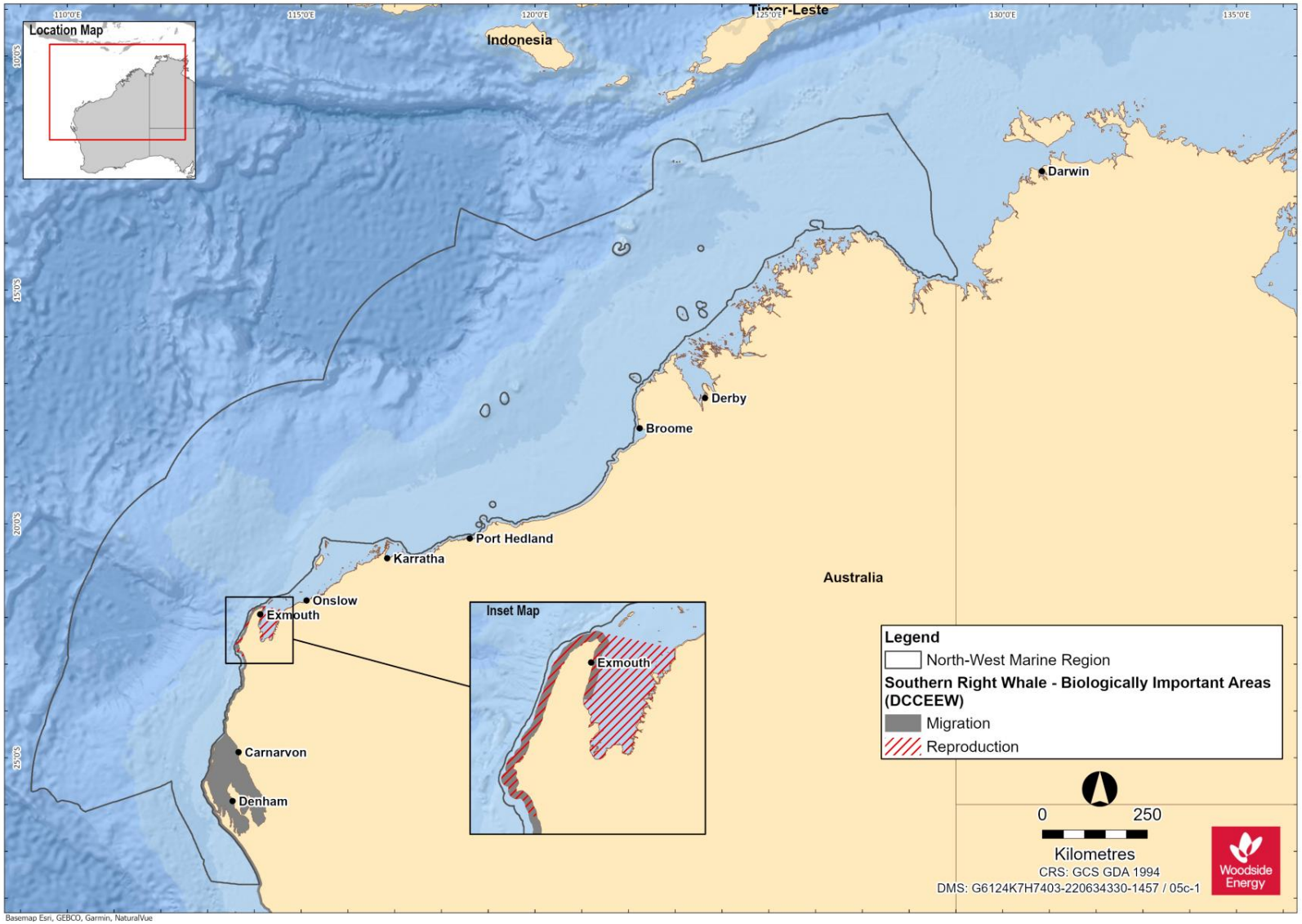


Figure 7-1 Habitat critical to the survival for the southern right whale in the NWMR (DCCEEW, 2024a)

7.7 Biological Important Areas in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024) identified BIAs representing important life cycle stages and behaviours for six species of marine mammal in the NWMR: the humpback whale, the pygmy blue whale, Australian snubfin dolphin, Australian humpback dolphin, spotted bottlenose dolphin and dugong, are presented in **Table 7-3**.

Table 7-3 Marine mammal BIAs within the NWMR.

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
Humpback whale[12]	✓	✓	✓	Shark Bay Exmouth Gulf (north migration – early June) (south migration – late Aug to Oct) Southern Kimberley region	No foraging BIA identified within the NWMR	Nursing Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Core calving in waters off the Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Southern border of the NWMR to north of the Kimberley (arrive June)
Blue whale and pygmy blue whale [15 16]	✓	✓	✓	No resting BIA identified within the NWMR	Possible foraging areas off Ningaloo and Scott Reef	No breeding BIA identified within the NWMR	No calving BIA identified within the NWMR	Augusta to Derby. Along the shelf edge at depths of 500 m to 1000 m; appear close to Ningaloo Coast Montebello Islands area on southern migration (north: April – Aug) (south: Oct – late Dec). Potentially still present January (McCauley et al., 2018).
Southern right whale[17]	-	-	✓	No resting BIA identified within the NWMR	No foraging BIA identified within the NWMR	Exmouth Gulf	No calving BIA identified within the NWMR	Migration along Australian coastline between April to October extending up to the Exmouth Gulf breeding BIA

[14] Includes areas defined as 'foraging', 'foraging likely' and 'foraging (high density prey) as per AMSIS (GA, 2024). These areas are shown in the BIA figures.
[15] DSEWPAC (2012a)
[16] Commonwealth of Australia (2015a)
[17] Revised BIAs (October 2023) - https://www.dcceew.gov.au/environment/marine/bias

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
Australian snubfin dolphin [12]	✓	✓	-	Cambridge Gulf Camden Sound area Prince Regent River Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay, Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	No migration BIA identified within the NWMR
Indo-Pacific humpback dolphin	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet	Roebuck Bay Willie Creek Prince Regent River	No migration BIA identified within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
					Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island Maret Islands Bigge Island King Sound, southern sector Vansittart Bay, Anjo Peninsula	Doubtful Bay Deception Bay Augustus Island		
Spotted bottlenose dolphin	✓	✓	✓	No resting BIA identified within the NWMR	Roebuck Bay Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Dampier Peninsula
Dugong[12]	✓	✓	✓	No resting BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay Roebuck Bay Dampier Peninsula	Eastern side of Dirk Hartog Island May - September Exmouth Gulf and Ningaloo year-round	Exmouth Gulf Ningaloo Reef Shark Bay	Within Shark Bay June - November and within Roebuck Bay year-round

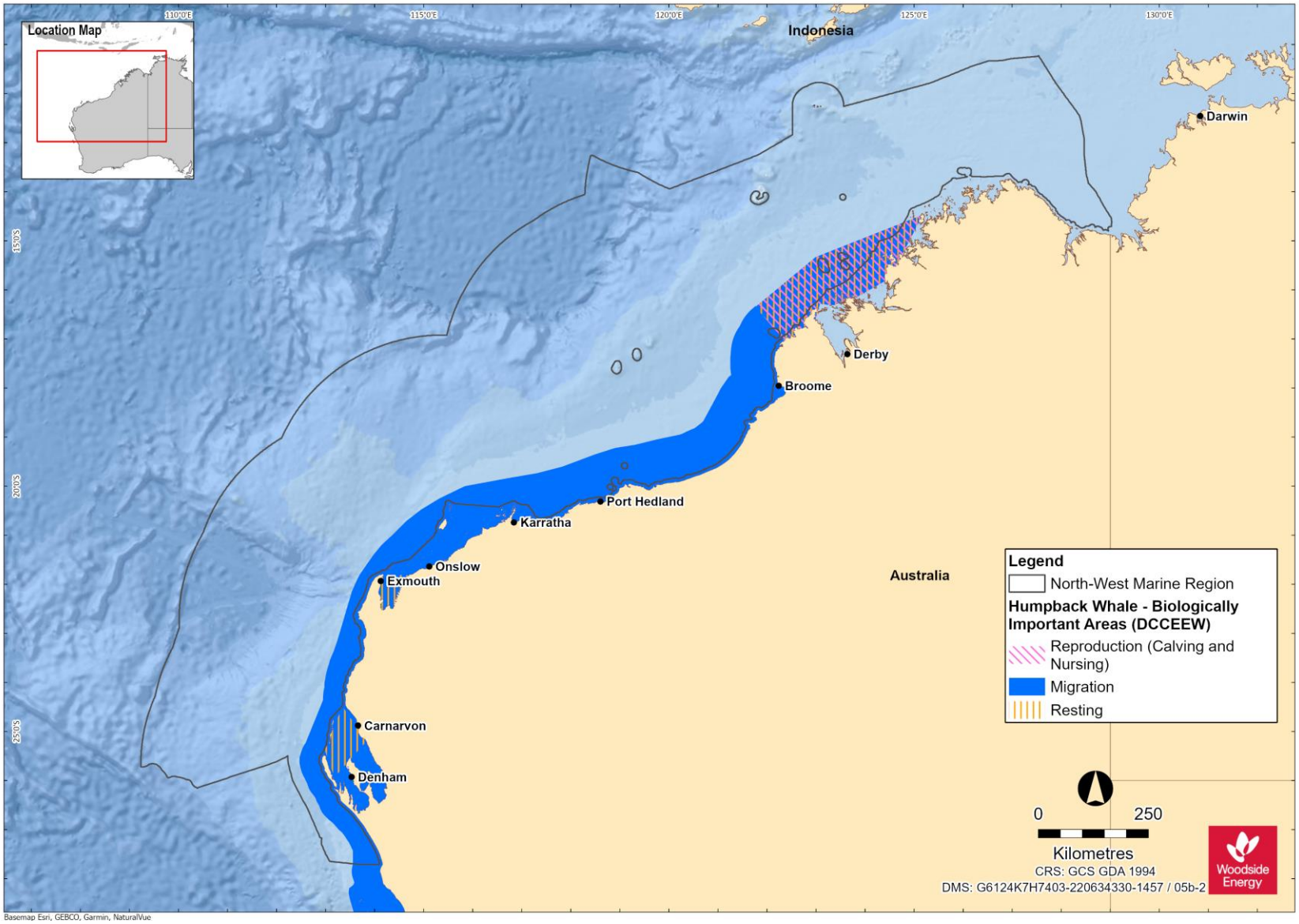


Figure 7-2 Humpback whale BIAs for the NWMR (data source: DCCEEW, 2024b)

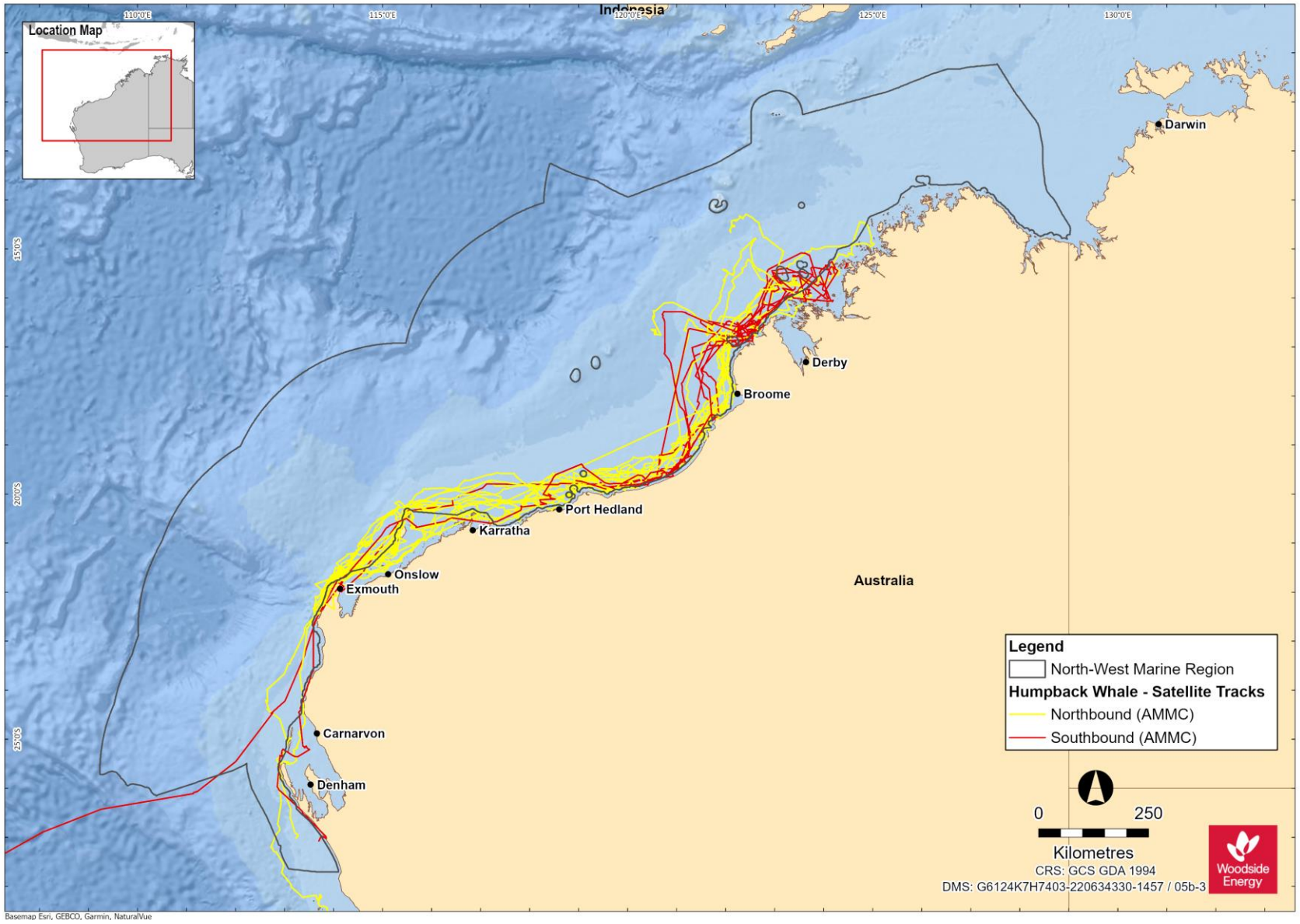


Figure 7-3 Humpback whale tagged tracks for north and south bound migrations (AMMC as published in Double et al. 2010 and 2012)

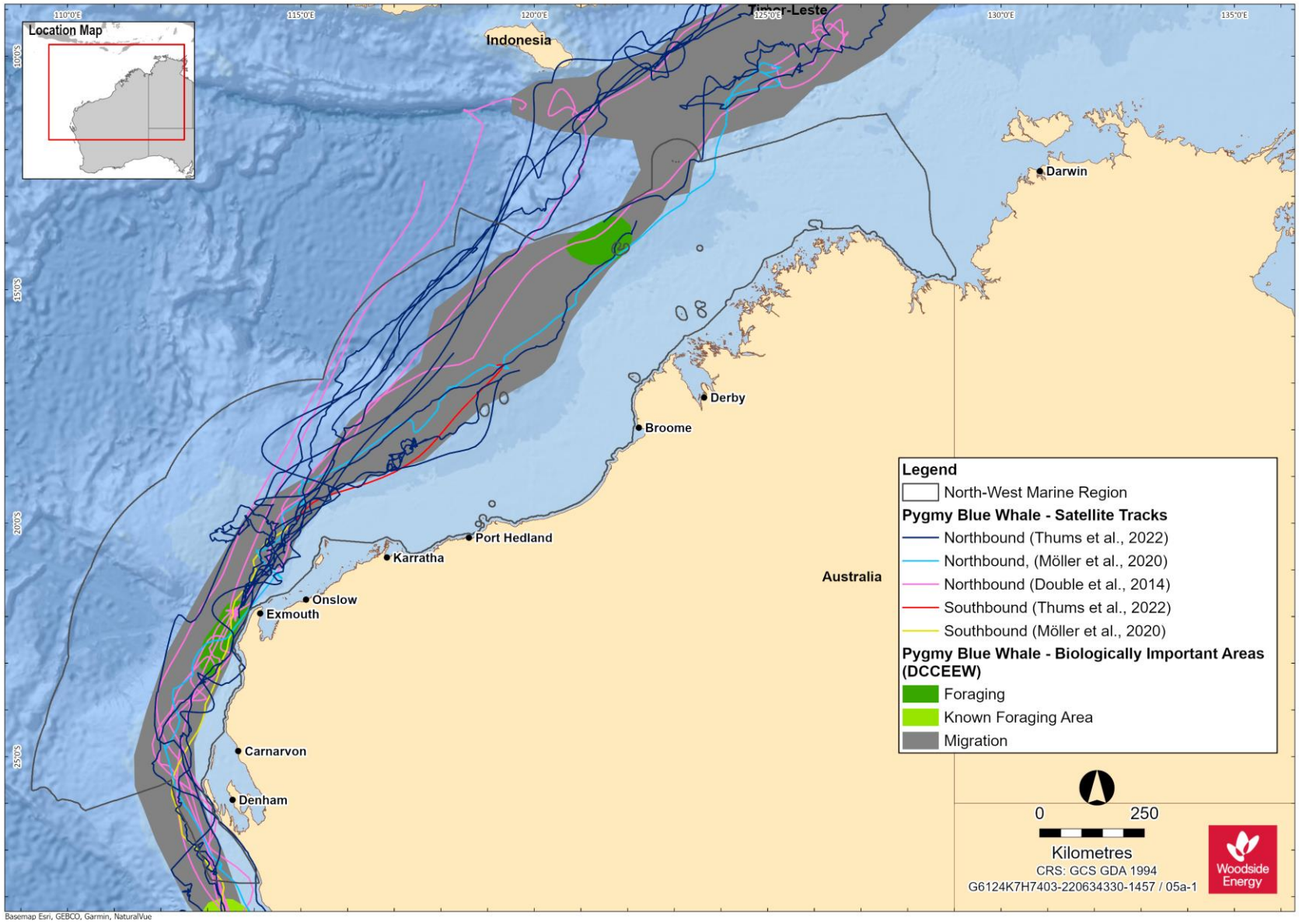


Figure 7-4 Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration (data source for BIAs: DCCEEW, 2024b)

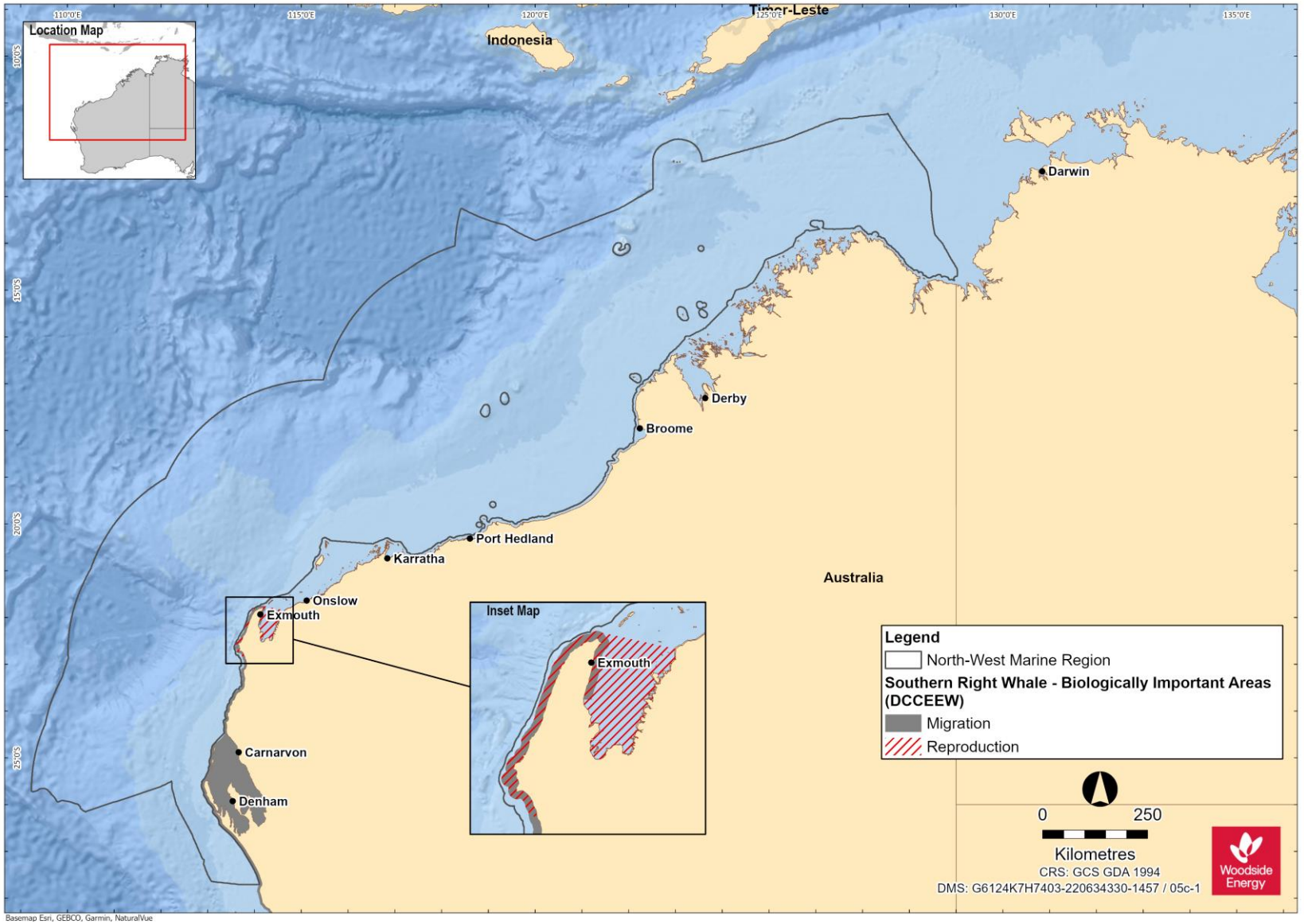


Figure 7-5 Southern right whale BIAs for the NWMR. Migration and reproduction BIAs along the coast extend to 3 nm (data source: DCCEEW, 2024b)

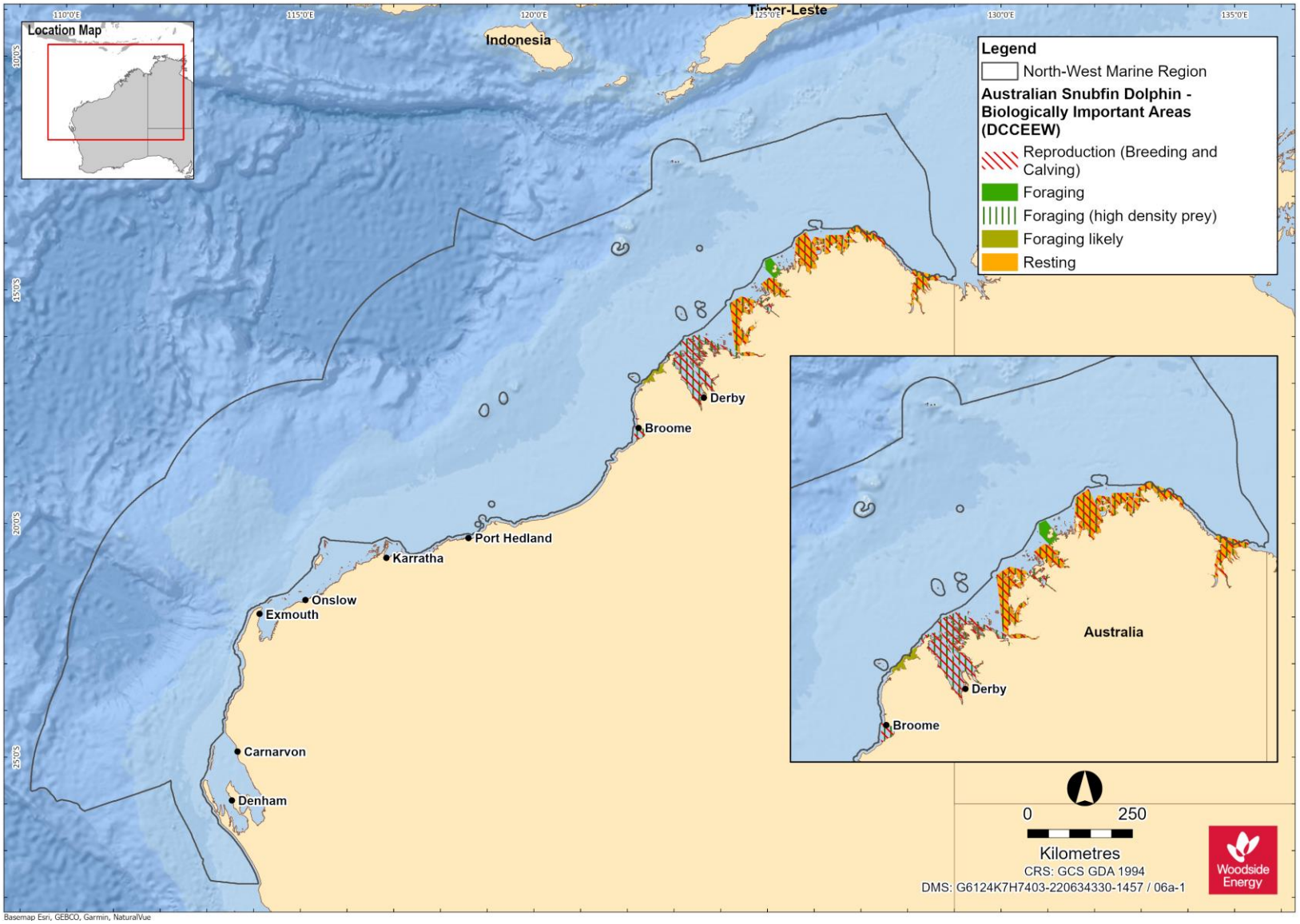


Figure 7-6 Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

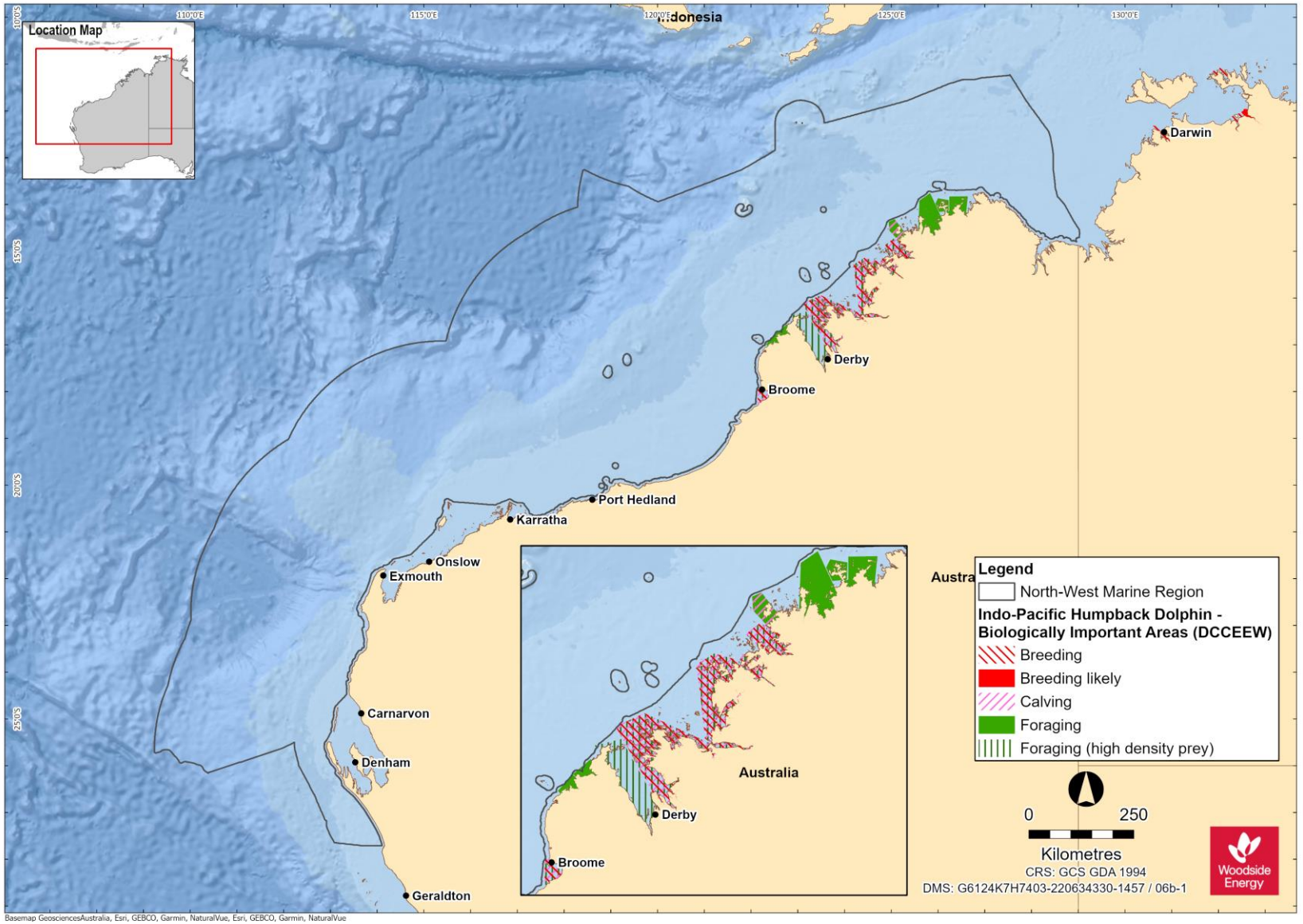


Figure 7-7 Indo-Pacific humpback dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

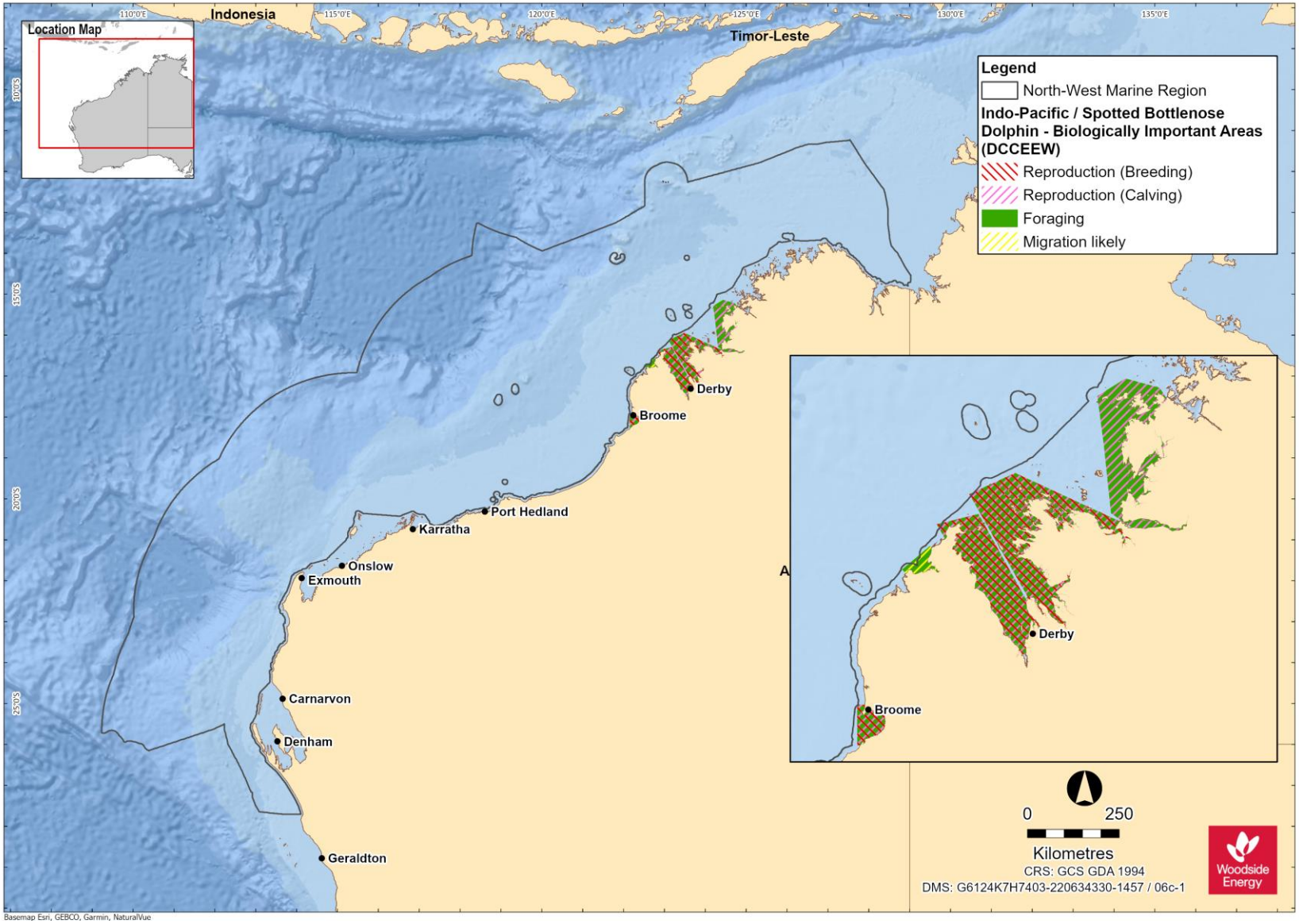


Figure - Spotted bottlenose dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

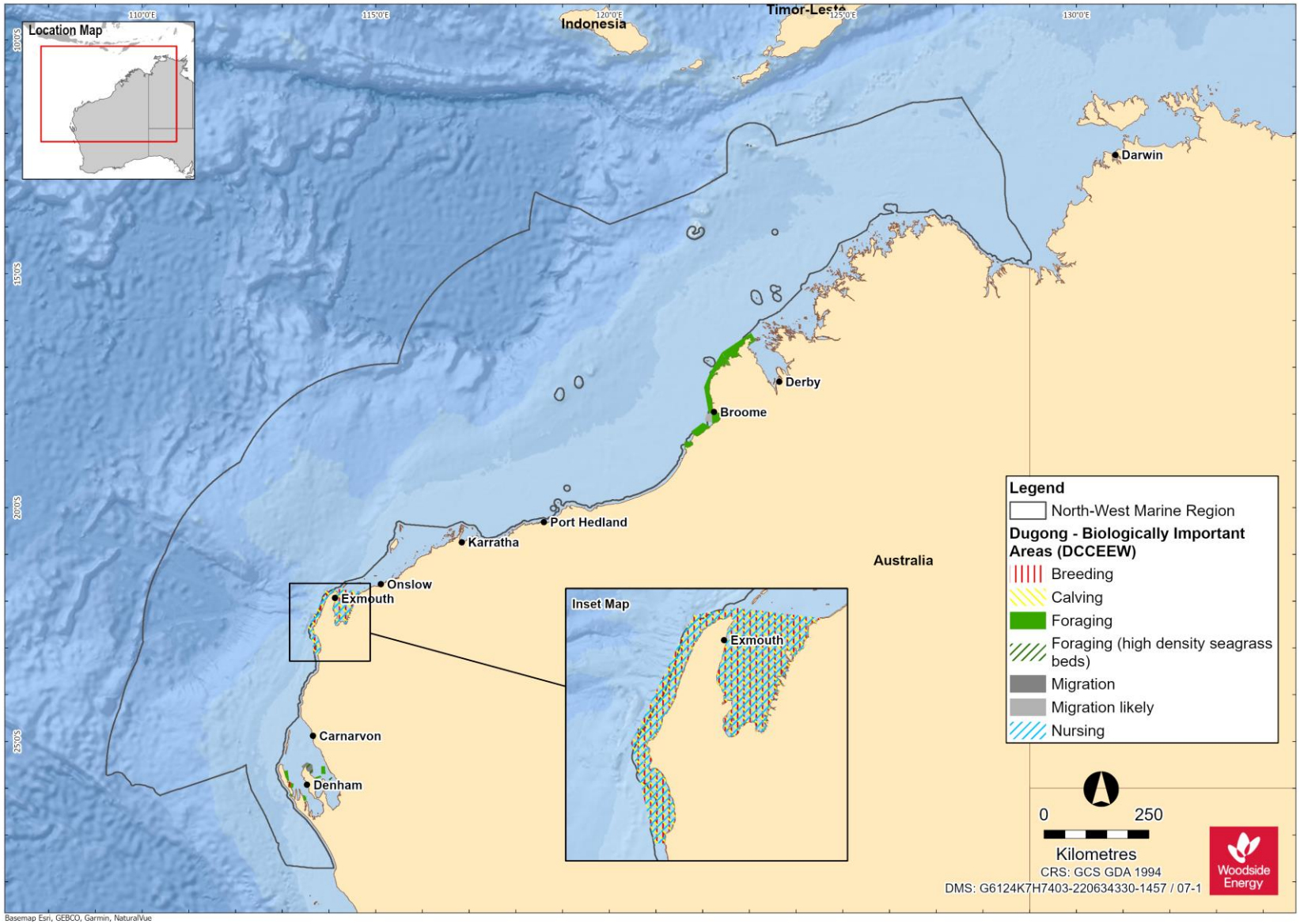


Figure 7-8 Dugong BIAs for the NWMR (data source: DCCEEW, 2024b)

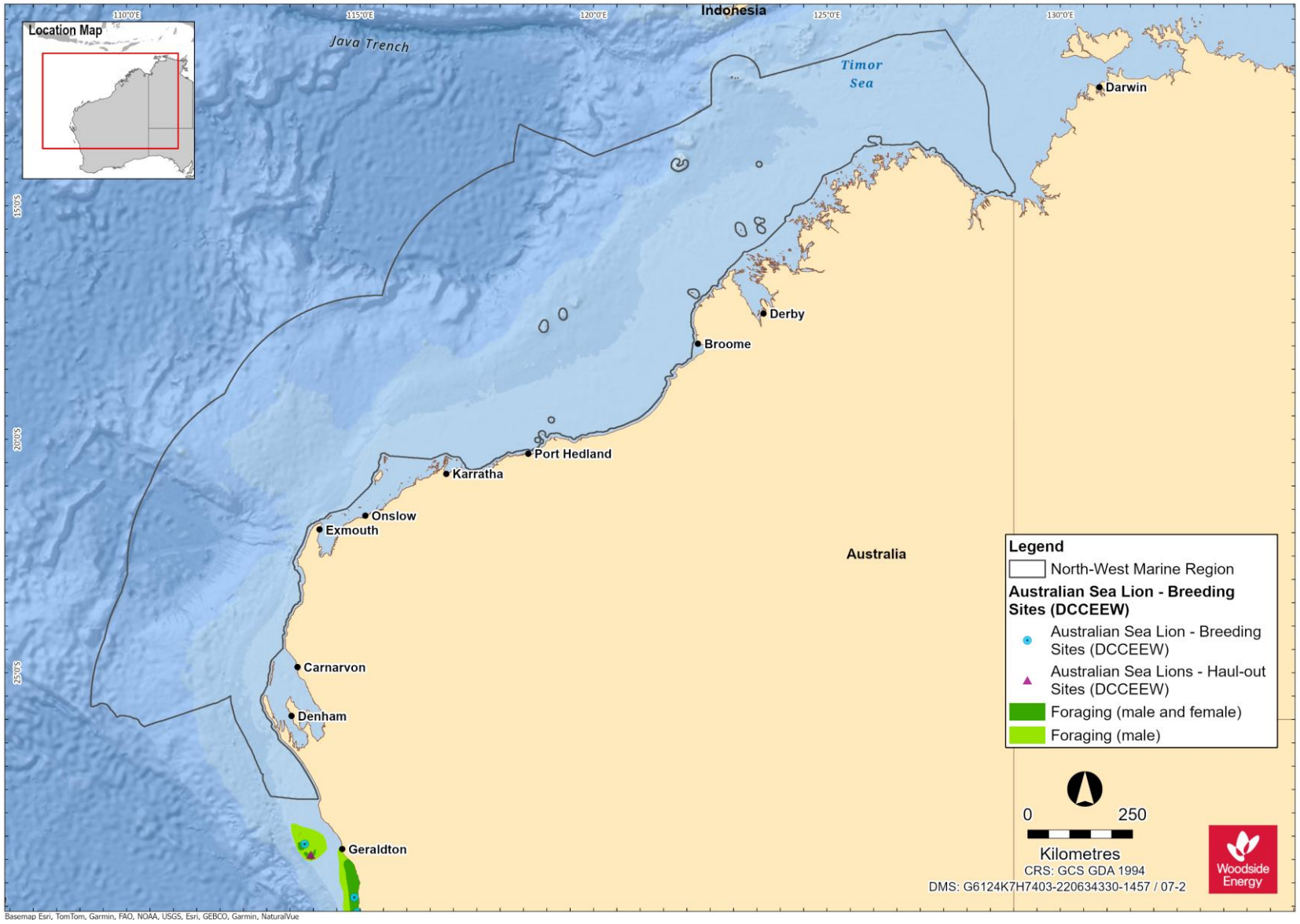


Figure 7-9 Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR (data source: DCCEEW, 2024b)

7.8 Marine Mammal Summary for the NWMR

7.8.1 Browse

The Browse activity area includes biologically important habitat for six threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (breeding, calving and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas);
- spotted bottlenose dolphin (foraging, breeding and calving areas); and
- dugong (foraging).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.8.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for six threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas);
- spotted bottlenose dolphin (present but no BIAs); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.8.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for four threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- southern right whale (reproduction area);
- humpback whale (resting and migration areas);
- spotted bottlenose dolphin (present but no BIAs); and
- dugong (foraging and breeding/ calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

8. SEABIRDS AND MIGRATORY SHOREBIRDS OF THE NWMR

8.1 Regional Context

The NWMR supports high numbers and species diversity of seabirds and migratory shorebirds including many that are EPBC Act listed, threatened and migratory. The NWMR marine bioregional plan reported 34 seabird species (listed as threatened, migratory and/or marine) that are known to occur, and 30 of 37 species of migratory shorebird species that regularly occur in Australia, are recorded at Ashmore Reef in the NWMR (DSEWPAC, 2012d). The NWMR marine bioregional plan also noted that Roebuck Bay and Eighty Mile Beach are internationally significant and recognised migratory shorebird locations.

A 'Seabird and Shorebird Existing Knowledge and Threats' report was prepared (2022) and updated in 2024 (Worley, 2024) to identify key bird species (categorised: pelagic seabirds, nearshore seabirds, shorebirds and others) and their threats in the NWMR (Advisian, 2024). The high and moderate occurrence species for the NWMR were informed from this report, as well as from PMST results. The report identified 92 species.

Each species was assigned to one of three frequency of occurrence levels:

- High – breeding and foraging aggregations known to occur.
- Moderate – known or likely presence.
- Low – may occur, or at limits of species range.

Table 8-1 includes those considered key species, i.e., high or moderate occurrence (Worley, 2024), and listed threatened and/or migratory under the EPBC Act with a total of 56 key species identified (comprising 22 seabirds and 34 shorebirds).

Many migratory seabirds and shorebirds are protected through bilateral agreements between Australia and Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), recognising the migratory route and important stopover and resting habitats of the East Asian-Australasian Flyway (EAAF). Important migratory bird habitats are also recognised as part of protected wetlands of international significance under the Ramsar Convention. Important Bird Areas (IBAs) for the NWMR, which are also recognised as global Key Biodiversity Areas (KBAs) (BirdLife Australia[18]), include:

- Roebuck Bay KBA (and Ramsar site): Internationally significant migratory shorebird species.
- Mandora Marsh and Anna Plains KBA (adjacent to Eighty Mile Beach, Ramsar site): Internationally significant migratory shorebird species.
- Dampier Saltworks KBA: Internationally significant migratory shorebird species.
- Montebello Islands KBA: Shorebird and seabird species.
- Barrow Island KBA: Shorebird and seabird species.
- Exmouth Gulf Mangroves KBA: Internationally significant migratory shorebird species.

Table 8-1 presents a list of the high and moderate occurrence threatened and migratory seabird and shorebird species (as per subject matter expert review, Worley (2024)) that occur within the NWMR, with their conservation/protected status, relevant recovery plans and/or conservation advice.

18 https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20(KBAs,of%20advocacy%20for%20protected%20areas. [Accessed April, 2021]

Table 8-1. High and moderate occurrence seabird and migratory shorebird species (threatened/migratory/marine) identified by the EPBC Act PMST and NWMR Seabird and Shorebird Existing Knowledge and Threats report as potentially occurring within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Seabirds							
Diomedea amsterdamensis	Amsterdam Albatross	Endangered	Migratory	Marine	Critically Endangered	Endangered	National Recovery Plan for albatrosses and petrels (DCCEEW, 2022)
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Vulnerable	Vulnerable	National Recovery Plan for the Australian Fairy Tern *Sternula nereis nereis (Commonwealth of Australia, 2020b)* EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Anous tenuirostris melanops	Australian lesser noddy	Vulnerable	N/A	Marine	Endangered	Least Concern	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 hectares (DEWHA, 2009)
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Least Concern	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
Sula leucogaster	Brown booby	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	Least Concern	

[19] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)

[20] IUCN. 2024. *The IUCN Red List of Threatened Species. Version 2024-1*. https://www.iucnredlist.org (accessed on 13/08/2024)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	Near Threatened	
Oceanites oceanicus	Wilson's storm petrel	N/A	Migratory	Marine	Migratory	Least Concern	
Anous stolidus	Common noddy	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for predation by feral cats (DoE, 2015c)
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	
Fregata minor	Great frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	
Sula sula	Red-footed booby	N/A	Migratory	Marine	Migratory	Least Concern	
Phaethon rubricauda	Red-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
Onychiprion anaethetus (listed as *Sterna anaethetus)*	Bridled tern	N/A	Migratory	Marine	Migratory	Least Concern	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sternula albifrons	Little tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sterna hirundo	Common tern	N/A	Migratory	Marine	Migratory	Least Concern	
Hydroprogne caspia	Caspian tern	N/A	Migratory	Marine	Migratory	Least Concern	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Migratory	Near Threatened	
Sula dactylatra	Masked booby	N/A	Migratory	Marine	Migratory	Least Concern	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
All seabird species							Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2020a) National Light Pollution Guidelines for Wildlife (DCCEEW, 2023d)
	Migratory shorebirds						
Numenius madagascariensis	Eastern curlew, Far Eastern curlew	Critically endangered	Migratory	Marine	Critically endangered	Endangered	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEW, 2023f)
Calidris ferruginea	Curlew sandpiper	Critically endangered	Migratory	Marine	Critically endangered	Near Threatened	Conservation Advice *Calidris ferruginea* Curlew sandpiper (DCCEEW, 2023g)
Limosa lapponica menzbieri	Bar-tailed godwit (*menzbieri*)	Endangered	Migratory	Marine	Critically endangered	Near Threatened	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (DCCEEW, 2024e)
Charadrius mongolus	Lesser sand plover	Endangered	Migratory	Marine	Endangered	Endangered	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threated Species Scientific Committee, 2016)
Rostratula australis	Australian painted snipe	Endangered	N/A	Marine	Endangered	Endangered	Conservation Advice *Rostratula australis* Australian painted snipe (Threatened Species Scientific Committee, 2013a)
Calidris canutus	Red knot	Vulnerable	Migratory	Marine	Endangered	Near Threatened	Conservation Advice *Calidris canutus* Red knot (DCCEEW, 2024f)
Calidris tenuirostris	Great knot	Vulnerable	Migratory	Marine	Critically endangered	Endangered	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW, 2024g)
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Least Concern	Conservation Advice *Charadrius leschenaultia* Greater sand plover (DCCEEW, 2023h)
Limosa limosa	Black-tailed godwit	Endangered	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limosa limosa* black-tailed godwit (DCCEEW, 2024h)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Limnodromus semipalmatus	Asian dowitcher	Vulnerable	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limnodromus semipalmatus* Asian dowitcher (DCCEEW, 2024j)
Tringa nebularia	Common greenshank	Endangered	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Tringa nebularia* Common greenshank (DCCEEW, 2024i).
Arenaria interpres	Ruddy turnstone	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Arenaria interpres* Ruddy turnstone (DCCEEW, 2024k)
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Marine	Migratory	Vulnerable	Conservation Advice for *Calidris acuminata* Sharp-tailed sandpiper (DCCEEW, 2024l)
Xenus cinereus	Terek sandpiper	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Xenus cinereus* Terek sandpiper (DCCEEW, 2024m)
Pluvialis squatarola	Grey plover	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Pluvialis squatarola* Grey plover (DCCEEW, 2024n)
Pluvialis fulva	Pacific golden plover	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa totanus	Common redshank	N/A	Migratory	Marine	Migratory	Least Concern	
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa stagnatilis	Marsh sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris melanotos	Pectoral sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa glareola	Wood sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Limicola falcinellus	Broad billed sand piper	N/A	Migratory	Marine	Migratory	Least Concern	
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	Marine	Migratory	Near Threatened	
Calidris ruficollis	Red-necked stint	N/A	Migratory	Marine	Migratory	Near Threatened	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Calidris pugnax	Ruff	N/A	Migratory	Marine	Migratory	Least Concern	
Xenus cinereus	Terek sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Numenius phaeopus	Whimbrel	N/A	Migratory	Marine	Migratory	Least Concern	
Numenius minutus	Little curlew	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris alba	Sanderling	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris subminuta	Long-toed stint	N/A	Migratory	Marine	Migratory	Least Concern	
Gallinago stenura	Pin-tailed snipe	N/A	Migratory	Marine	Migratory	Least Concern	
Gallinago megala	Swinhoe's snipe	N/A	Migratory	Marine	Migratory	Least Concern	
Glareola maldivarum	Oriental pratincole	N/A	Migratory	Marine	Migratory	Least Concern	
Charadrius veredus	Oriental plover	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa brevipes	Grey-tailed tattler	N/A	Migratory	Marine	Migratory and Priority species	Near Threatened	
All migratory shorebird species							Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c) EPBC Act Policy Statement 3.21—Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017) National Light Pollution Guidelines for Wildlife (DCCEEW, 2023)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
	Other marine birds						
Apus pacificus	Fork-tailed swift		Migratory	Marine	N/A	Least Concern	None
Pandion haliaetus	Osprey		Migratory	Marine	N/A	Least Concern	None

8.2 Seabirds in the NWMR

Seabirds are birds that are adapted to life within the marine environment (oceanic and coastal) and are generally long-lived, have delayed breeding and have fewer young than other bird species (Commonwealth of Australia, 2020a).

At least 22 key seabird species (high and moderate occurrence, listed as threatened and/ or migratory under the EPBC Act) are known to occur in the NWMR. These include a variety of species of terns, noddies, petrels, shearwaters, frigatebirds, and boobies.

Seabird species can be grouped into pelagic and nearshore seabirds, based on lifecycle behaviour, distributions and key habitats (Worley, 2024). Pelagic species spend most of their life at sea, ranging over large distances to forage. These pelagic species only come onshore to breed and raise chicks at natal or high-fidelity breeding colonies on remote, offshore island locations in and adjacent to the NWMR. Many species are ecologically significant to the NWMR, as they are endemic to the region, can be present in large numbers in breeding seasons and non-breeding seasons, and many exhibit extensive annual migrations that include marine areas outside the Australian EEZ (DSEWPAC, 2012d). Nearshore seabirds are confined to nearshore areas (unless migrating), have shorter foraging trips during breeding and may rest on land/shoreline habitats outside of breeding periods (Worley, 2024).

The presence of seabirds within the NWMR is influenced by seabird species that migrate and forage in the area during the non-breeding season and this includes many seabird species that breed on the Houtman Abrolhos in the SWMR. Pelagic seabirds have been documented foraging at current boundaries and seasonal upwellings within the NWMR (refer to Sutton et al., 2019). The Houtman Abrolhos Islands National Park located in the SWMR is one of the most significant seabird breeding locations in the eastern Indian Ocean. 16 species of seabirds breed there. 80% of common (brown) noddies, 40% of sooty terns and all the lesser noddies found in Australia nest at the Houtman Abrolhos (Surman, 2019). Important seabird areas in the NWMR are as identified by the KBAs (refer to **Section 8.1**), EPBC Act Bioregional Biologically Important Areas and subject matter expert review, as presented in Worley (2024).

High occurrence key seabird species

Species descriptions for high occurrence key seabird species are provided below. High occurrence seabird species were defined as those with breeding and foraging aggregations within NWMR (Worley, 2024).

Wedge-tailed shearwater (pelagic seabird)

The wedge-tailed shearwater (*Ardenna pacifica*) is listed migratory under the EPBC Act and *Biodiversity Conservation Act 2016* (WA) (BC Act). It is a pelagic, marine seabird known from tropical and subtropical waters. Its distribution is widespread across the Indian and Pacific oceans with a global population of 2.6 million pairs. Of this, approximately 1 million pairs breed in Australia, most of which do so on islands in Western Australia between Rottnest Island in the south to Ashmore Reef in the north. The largest breeding populations are at the Houtman Abrolhos (600,000 pairs – Surman and Nicholson 2009), and throughout the NWS region of the NWMR, where large populations on Muiron Islands (300,000 pairs) and Serrurier Island (60,000 pairs) exist (Surman and Nicholson 2009, 2015).

Adults are absent from their breeding colonies during the interbreeding period and return from their tropical Indian Ocean over-wintering grounds from late-June onwards to re-excavate their burrows. This species is highly synchronous in timing of breeding; all eggs within a colony are laid within a ten-day period. They lay their single egg during early-November, which is then incubated until the chick hatches (after 53 days) in early-January. Once hatched, adults leave the burrows to forage locally during the day returning at night to feed chicks until they are ready to fledge (Nicholson 2002). Due to the high synchronicity in egg laying, fledging is restricted to the first two weeks of April (Nicholson 2002).

Breeding behaviours are nocturnal in wedge-tailed shearwaters. Adults return to and depart the colony at night and fledglings depart the colony at night. In the lead up to fledging, chicks also leave their burrows to exercise their wings outside burrows.

Adults may not return to feed chicks each night; wedge-tailed shearwaters breeding on the Muiron Island (north) undertook extensive foraging trips during the incubation period (1,200 – 1400 km) and shorter trips during chick rearing (<300 km, Cannell et al., 2019). Longer foraging trips took individuals in a north-west direction offshore towards oceanic seamounts. Conversely, the shorter tended to include waters to the west and north-west of the Muiron Islands (Cannell et al., 2019). In addition to the Muiron Islands, this dual foraging strategy, whereby parents alternate or mix short and long trips, have been recorded in wedge-tailed shearwaters breeding at Heron Island, Queensland, Lord Howe Island, Tasmania (Peck & Congdon, 2005), and New Caledonia (Weimerskirch et al., 2020). However, divergent foraging strategies have been detected between colonies, which is linked to the proximity of colonies to high productivity waters (Peck & Congdon, 2005; Weimerskirch et al., 2020).

While the presence of squid and lanternfish in their diet (Surman & Nicholson, 2009) suggests nocturnal foraging occurs in this species, GPS tracking studies found that foraging activities at sea were more frequent during the day compared with at night (Weimerskirch et al., 2020; Catry et al., 2009). During the day, resting periods on the sea surface were short whereas at night individuals spent a large proportion of their time resting at the surface (Weimerskirch et al*.,* 2020). Other prey species include schooling bait fishes and cephalopods, often feeding in association with other pelagic seabird species such as sooty terns and common noddies, and pelagic fishes such as tunas and mackerels. Diet composition is likely to vary between colonies, depending upon the prey available, and thus determining both the foraging strategy, as described above, and also the division of nocturnal and diurnal foraging. Wedge-tailed shearwaters dive between 3 and 66 m, actively pursuing prey by feeding at the surface or by actively swimming below bait schools.

Post-breeding, wedge-tailed shearwaters breeding on the Houtman Abrolhos Islands and Varanus Island migrated 4,500 km north-west to equatorial waters of the Indian Ocean around 90°E (Surman et al*.,* 2018), traversing the NWMR, and those from the Great Barrier Reef migrated to the northern hemisphere, approximately 6,000 km northwards to Micronesia (McDuie and Congdon, 2016).

Wedge-tailed shearwaters are observed during breeding across all shelf waters and are the most frequently encountered seabird at sea. Large numbers of wedge-tailed shearwaters have been observed foraging off the North-west Shelf between May - August (Surman pers obs.).

Foraging and breeding BIAs are located for the wedge-tailed shearwater across the NWMR (**Figure 8-1**). It is noted that both breeding and foraging BIAs represent foraging habitat utilised by adult (chick-rearing) wedge-tailed shearwaters during the breeding season.

Australian lesser noddy (pelagic seabird)

The Australian lesser noddy (*Anous tenuirostris melanops*), which is endemic to Australia, is listed vulnerable under the EBPC Act and endangered under the BC Act. The largest breeding colonies are found on the Houtman Abrolhos Islands with fewer records of breeding on

Ashmore Reef (Clark et al., 2011; Cannell & Surman 2021). Possible colonisation of Cocos (Keeling) Island is reported; however, it is unconfirmed if this is the Australian subspecies (Stokes and Hinchey 1990).

At the Houtman Abrolhos Islands, the breeding population has been estimated at ~50,000 breeding pairs (Surman et al., 2016). At this location, studies indicate that breeding is not highly synchronised; the single egg clutches were laid over a 102-day period from late August to early December, peaking in September (Surman & Wooller 1995). The incubation period averaged 34 days and the fledging period 40 days. (Surman & Wooller 1995).

Studies of foraging ecology of breeding Australian lesser noddies at the Houtman Abrolhos Islands found that they are largely diurnal, foraging between 04h00 and 20h40 and returning to their colony at night (Surman et al., 2017). From this study, the GPS tracks of 17 adults during incubation or chick provisioning revealed that most foraging trips lasted for between 2 and 4 hours with a total trip distance of less than 40 km. However, some trips lasted up to 16 hours covering distances of up to 112 km (Surman et al., 2017). During non-breeding, birds appear to remain near the breeding islands year-round (Higgins and Davies 1996).

Due to differences in climate and seasonality experienced at the Houtman Abrolhos Islands and Ashmore Reef, timing of breeding differs. The Ashmore Reef population has been recorded breeding in the Austral autumn/winter (Clarke and Herrod, 2016), while the Houtman Abrolhos Islands populations breed during the Austral spring/summer (Surman and Wooller, 1995).

No BIAs for the Australian lesser noddy overlap the NWMR and tracking data suggests that individuals breeding at the Houtman Abrolhos Islands foraged predominantly in a south-westerly direction, remaining within waters of the SWMR (Surman et al., 2017). Several individuals were observed roosting with common noddies on Bernier Island, near Carnarvon in 2022 (Nicholson pers obs.). However, it is unlikely that waters of the NWMR provide significant habitat for individuals breeding at the Houtman Abrolhos Islands. The small population of this subspecies breeding on Ashmore Reef may show similar foraging ecology during breeding and remain in the vicinity of the islands, utilising habitats of the NWMR.

Brown booby (pelagic seabird)

The brown booby (*Sula leucogaster*) is listed migratory under the EPBC Act and BC Act. It is a cosmopolitan species with a pan-tropical distribution. Within the NWMR, large colonies occur at offshore islands including the Lacepede Islands (17,000 pairs, Mustoe and Edmunds 2008), Ashmore Reef (5,000 pairs at Middle Island and 3000 pairs at East Island in 2007, Swann 2005a; Swann 2005b; Swann 2005c; Milton 2005; Clarke 2010), Bedout Island (1,000 pairs) and Adele Island (7,500 pairs, Burbidge et al. 1987). Small colonies of up to 10 pairs have been recorded at Overhanging Rock, within the Lowendal Islands (Nicholson, pers obs.). The total breeding population in the Australian region in 1996–97 was estimated at 59,940 to 73,900 pairs (WBM Oceanics & Claridge 1997).

Brown boobies do not migrate far from their breeding islands, rarely dispersing more than 240 km from their natal colony (Dunlop et al., 2001). Brown boobies forage within 50 km of their colony where they plunge dive, reaching up to 15 m depth and pursuing their prey when ascending after the dive (Austin et al., 2021). Brown booby diet is principally medium to large surface schooling prey (northern pilchard, Indian anchovy, flying fish and cephalopods), often associated with feeding tunas and mackerels (Cannell et al. 2022; Austin et al., 2021).

Brown boobies are not prone to waterlogging and will roost on the seas surface and are known to form large aggregations on oil and gas platforms throughout the NWMR (Surman pers obs.), Woodside facilities indicating wider distribution of non-breeding individuals across the NWMR.

Breeding/foraging BIAs for the brown booby in the NWMR are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (**Figure 8-3**). Breeding is reported as occurring between January and March, however this becomes protracted through to October at Ashmore Reef (Clarke et al. 2016). Brown Boobies are resident in the NWMR throughout the year, although they may forage long distances over the open ocean (Surman and Nicholson 2011).

Breeding/foraging BIAs for the brown booby in the NWMR are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (**Figure 8-3**).

Red-footed booby (pelagic seabird)

The red-footed booby (*Sula sula*) is listed migratory under the EPBC Act and BC Act. Compared to brown boobies, the red-footed booby occurs in fewer numbers across the NWMR. Within the NWMR they breed at Ashmore Reef (up to 100 pairs, Clarke & Herrod, 2016) and Adele Island (14 pairs, Botle et al*.,* 2004). At Ashmore Reef they have been recorded breeding year-round (Clarke & Herrod, 2016).

The red-footed booby is one of the most widely distributed of the boobies across oceanic waters in the tropical Indian Ocean; during non-breeding, individuals have been observed up to 800 km from their natal colony (Dunlop et al*.,* 2001). However, individuals are limited to a range of 150 km from the breeding colony when breeding (Wiemerskirsch et al*.,* 2005). In the Ashmore area, adults have been detected up to 125 km from the nearest breeding islands during October (unpubl. Data, referenced in Clarke & Herrod, 2016).

Red-footed boobies are diurnal foragers, plunge diving for flying fishes (predominately) across their range (Commonwealth of Australia, 2020a). Breeding/foraging BIAs for the red-footed booby are associated with breeding colonies at Ashmore Reef and Adele Island (**Figure 8-3**).

Masked booby (pelagic seabird)

The masked booby (*Sula dactylatra*) is listed migratory under the EBPC Act. Within the NWMR, the sub-species *Sula dactylatra bedouti* ranges from the Dampier Archipelago, along the entire coast into the NMR and across to Queensland (Merchant & Higgins, 1990). Individuals have also been recorded at Barrow Island.

Within the NWMR, Bedout and Adele Island represent the main breeding locations with 400 and 320 breeding pairs estimated at each respectively (Marchant & Higgins 1990; Swann et al. 2002). Breeding is also reported at the Ashmore Reef group with up to 30 breeding pairs recorded on Middle Island and 15 pairs on East Island (Burbidge & Fuller 1996; Hassell et al., 2003; Swann 2005a; Swann 2005b; Swann 2005c; Milton 2005; Clarke 2010; Clarke et al. 2016). Up to two pairs have also been recorded breeding in the Lacapede Group (Hassell et al. 2003).

A recent study of individuals from Bedout Island indicated low genetic exchanges (mitochondrial genes) with other masked booby colonies currently studied, suggesting a dependence on local recruitment for population persistence (Kingsley et al., 2019). Further, the low exchange of mitochondrial genes may reflect high breeding site fidelity and limited foraging distances during the breeding season. Due to the concentration in a relatively small number of areas to breed, any catastrophe at these sites (e.g. oil spills, or disturbance/vandalism of nests) could have a substantial impact on the population (Birds Australia August 2005).

Studies of foraging behaviour of individuals breeding within the NWMR are lacking, however studies at other locations indicate that foraging is diurnal and ranges vary between 100 and 200 km of the breeding colony (Weimerskirch et al. 2008).

There are no BIAs for this species in the NWMR.

Common noddy (pelagic seabird)

The common (or brown) noddy (*Anous stolidus*) is listed as migratory under the EPBC Act and BC Act. The species is widespread in tropical and subtropical areas within and beyond Australia. This seabird species is gregarious and normally occurs in flocks, up to hundreds of individuals, when feeding or roosting.

The Houtman Abrolhos is the primary breeding habitat for the common noddy in the Eastern Indian Ocean, although breeding occurs across offshore islands of the NWMR, albeit in fewer numbers, including Bedout Island, Montebello Islands and Fazer Island (Johnstone et al*.,* 2013), and Ashmore Reef (Clark & Herrod, 2016). Breeding at Ashmore Reef has been recorded as occurring between April and November (Clark & Herrod, 2016).

During breeding, individuals nesting on Lancelin Island in the SWMR were found to forage diurnally (Shephard et al 2018). Tracked individuals travelled an average of 97 km from the colony with an average trip distance of 141 km, with significantly longer trips during chick rearing compared to incubation (Shephard et al*.,* 2018).

The species is highly pelagic outside breeding (March to August), with breeding individuals of the Houtman Abrolhos Islands travelling ~950 km north to the NWMR (Surman et al*.,* 2017). The species is often reported roosting on unmanned oil and gas platforms within the NWS and Timor Sea (Surman pers comm, 2021).

Although widespread across the NWMR during breeding and non-breeding, no BIAs for this species are located in the NWMR.

Bridled tern (pelagic seabird)

The bridled tern (*Onychiprion anaethetus* (listed as *Sterna anaethetus*) is listed migratory under the EPBC Act and BC Act. It is a common summer breeding visitor to the NWMR between September and April, especially around Dampier Archipelago and the Montebello Islands (Johnstone et al 2013). Breeding has also been reported on the Lowendal Islands (Nicholson 2002), Passage Islands and islands off Onslow from November–March (Johnstone et al 2013). Small breeding populations have also been recorded on East Island at Ashmore Reef between April-November and the Lacapede Islands (Clarke and Herrod 2016; Johnstone and Storr, 1998).

The migration and local movements of breeding birds within the NWMR are poorly defined; two individuals were tracked departing the Houtman Abrolhos islands in April/May, transiting along the continental shelf waters before departing Australian waters and migrating towards the Western Celebes Sea, east of Borneo (Surman et al., 2018). These individuals departed the Western Celebes Sea in August/September returning to the Houtman Abrolhos islands around 14 days later (Surman et al., 2018). This species has been regularly recorded on the continental shelf up to 70 km away from breeding locations during oceanic surveys (Surman and Nicholson, 2011; Dunlop et al., 2001).

Bridled terns feed diurnally on a range of species of fish, crustaceans, cephalopods and insects. In Australia, they feed almost entirely on fish, though they also take crustaceans and aquatic insects. They often feed on schools of fish forced to the surface by other predators (Dunlop, 1997). Bridled Terns forage mainly by contact dipping, with birds hovering or gliding close to the surface of the sea and swooping down and immersing only the head and breast when attacking prey, which are usually taken from the top few centimetres of the sea surface (<20 cm) (Dunlop, 1997).

During breeding at Penguin Island, WA, individuals foraged most commonly between 20 km and 40 km from the nearest breeding colony, though some were observed at distances up to 80 km (Dunlop, 1997). This species has also been recorded within 70 km of their breeding colonies within the NWMR, on outer continental shelf waters (Nicholson 2002; Dunlop et al. 2001).

Although foraging may be concentrated around breeding colonies during the breeding season, no BIAs in the NWMR have been identified for this species.

Frigate birds (pelagic seabirds)

The lesser (*Fregata ariel*) and great frigatebirds (*Fregata minor*) are both listed migratory under the EBPC Act and BC Act. They are the most widely distributed of the frigatebirds, with a pan-tropical distribution.

In the NWMR, the great frigatebird nests at Ashmore Reef and Adele Island. At Ashmore Reef they are found to breed year-round (Clark & Herrod, 2016). In addition to the Ashmore Reef and Adele Island, the lesser frigatebird also nests at Cartier Island, the Lacepede Islands and Bedout Island, which is thought to support more than 1% of the world's breeding population (BirdLife International 2021). On Ashmore Reef, the species breed in the Austral winter (Clark & Herrod, 2016).

During breeding, great frigatebirds breeding in the South China Sea on average foraged 75 km (maximum 150 km) from their breeding colony and lesser frigatebirds 123 km (maximum 300 km) (Mott et al*.,* 2017).

Outside of breeding, frigatebirds may disperse significant distances from their breeding colonies (Mott et al*.,* 2017). Great frigatebirds are wide ranging, being recorded between 900-1400 km from their natal colonies (Dunlop et al*.,* 2001). Tracking studies of non-breeding lesser and great frigatebirds roosting on Ashmore Reef and Adele Island demonstrated that individuals have large distributions including Australian coastal waters and in addition to the South China, Java and Sulu Seas and the Gulf of Thailand (Mott et al*.,* 2021). During the wet season in particular, Australian waters provided optimal habitat for non-breeding individuals of both species. (Mott et al*.,* 2021).

Both frigatebirds forage by snatching prey from the surface waters, or when prey break the surface. They also rely heavily upon kleptoparasitism, harrying other seabirds returning to their colonies with food until it is regurgitated. Frigatebirds are susceptible to waterlogging, so do not plunge or splash dive for prey nor do they roost on the seas surface. Across the NWMR they forage on flying fish, cephalopods, anchovies, northern pilchards and other medium sized prey (8-30 cm, Surman pers. Obs.).

Breeding/foraging BIAs for the great frigatebird in the NWMR are associated with breeding colonies on Ashmore Reef and Adele Island. For the lesser frigatebird, breeding/foraging BIAs are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (**Figure 8-4** Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)).

White-tailed tropicbird (pelagic seabird)

The white-tailed tropicbird (*Phaethon lepturus*) is listed migratory under the EBC Act and BC Act. The species breeds across many sites, but in low numbers (Commonwealth of Australia, 2020). In Australia, between 6,000 and 12,000 pairs nest on Christmas Island, with smaller fragmented populations at North Keeling Island (40 pairs). These individuals are expected to be members of the Christmas Island white-tailed tropicbird sub species *Phaethon lepturus fulvus*. While individuals of this subspecies can forage at great distances from colonies (see below), the numbers occurring in the NWMR are expected to be low.

In the NWMR, the white-tailed tropicbird is known to nest on Ashmore Reef and the Rowley Shoals, (10 breeding pairs, Clark 2010 and up to three nesting pairs Burbidge et al. 1996, respectively). Breeding can occur year-round (Clarke & Herrod, 2016).

Pennycuick et al. (1990) demonstrated that the white-tailed tropicbirds breeding in Puerto Rico foraged up to 89 km from the nest site when breeding and moved considerably larger distances when not breeding. Dunlop et al. (2001) observed birds from Christmas Island foraging singly between 1400-1600 km SE of Christmas Island.

This species regularly roosts on the seas surface, in between bouts of foraging. It is a solitary forager, rarely feeding in association with other seabird species and always in waters favourable for its principal prey, flying fish (Santos et al*.,* 2018). The species is a surface forager that occasionally undertakes shallow dives (Marchant & Higgins 1990).

There are breeding BIAs associated with nesting occurring at the Rowley Shoals and Ashmore Reef within the NWMR (

Figure 8-5).

Red-tailed tropicbird (pelagic seabird)

The red-tailed tropic bird is listed as Endangered (since December 2023) under the EPBC Act and 'Priority 4' under the BC Act.

Across the NWMR, the largest population breeds on Christmas Island (1,400 - 2,000 pairs, references within Sommerfeld et al., 2015) with additional key breeding locations on Cocos (Keeling) Group and islands of Ashmore Reef Marine Park (17-24 breeding pairs, Clarke et al., 2011; Clarke and Herrod, 2016). At Ashmore Reef, breeding pairs were observed year-round, with no discernible peak in breeding activity (Clarke et al., 2011).

The red-tailed tropicbird is a shallow diving species typically foraging diurnally within the first 4 m of the water column (LeCorre 1997). There is limited information concerning foraging range when breeding in Australia, but observations at sea in the Ashmore Reef region demonstrate they are capable of foraging considerable distances from land (unpubl. Data, Clarke, 2010). This corroborates data from elsewhere in their global range which reported foraging distances of 240 km during incubation, 109 km during chick rearing and maximum distances of 380 km (Fayat et al., 2023). This species has been observed during boat surveys of the outer shelf of the NWMR year-round (Surman and Nicholson 2011).

There are no BIAs for this species within the NWMR.

Australian Fairy Tern (nearshore seabird)

The Australian fairy tern (*Sternula nereis nereis*) is listed vulnerable under the EPBC Act. The WA breeding population (approximately 5000-6000 mature individuals) is dispersed over approximately 2500km of coastline (Greenwell, 2021). Within Western Australia, the subspecies comprises a sedentary Pilbara population and a partially-migratory population extending from Exmouth to Point Malcolm. Individuals of the partially-migratory population may occasionally migrate into the southern region of the NWMR during the winter months.

Within the NWMR breeding occurs in small colonies between June-September on offshore islands, including Simpson Island, Barrow Island, the Montebello Islands, the Lowendal Islands, Thevenard Island, Serrurier Island, the islands in the Dampier Archipelago, Maryanne Shoals and Egret Island (Dunlop 2018; Johnstone et al 2013; Surman pers. Obs.). Colonies tend to occupy areas rather than fixed sites, and nest sites can be abandoned after one or more years, even if they have been successful (Saunders and de Rebeira, 1985).

While information regarding foraging ecology of this species within the NWMR is lacking, the Australian fairy tern has been studied in South Australia. Here, species typically forages in inshore waters and has been reported to rarely travel beyond 2 km during the breeding season in South Australia (Paton and Rogers 2009).

Australian fairy terns are diurnal plunge diving seabirds, feeding exclusively on small (<60 mm) surface schooling bait fishes throughout their range. Prey include species of sprats, hardy heads and larval prey of some demersal fish species. Unlike many other terns, fairy terns are not dependent upon large pelagic fishes to drive their prey to the surface.

Breeding and foraging BIAs are identified for the fairy tern in the NWMR, as presented in **Figure 8-2**.

Little tern (nearshore seabird)

The little tern (*Sternula albifrons*) is listed migratory under the EPBC Act and BC Act. There are three sub-populations of little tern in Australia and two of these occurring in the NWMR: the northern Australian breeding subpopulation occurring around Broome and extending across the NWMR to Cape York, and an east Asian breeding subpopulation, with the terns present from Shark Bay to south-eastern Queensland during the Austral summer.

Recent surveys have found that little terns breed across the NWMR in small colonies (Surman pers. obs.). However, identification between subpopulations is difficult, and population estimates have high error due to the overlapping range and remote breeding sites of the northern populations. A southwards movement of breeding distribution has been noted at three key locations; Lowendal Islands (Surman pers comm.), Burrup Peninsula (Nicholson pers comm.), and North-west Cape (Greenwell and Dunlop 2021). Little terns usually forage close to their breeding colonies, typically within 5 km (Bertolero et al*.,* 2005) mainly on small fish (< 10 cm in length), but they also eat crustaceans, insects, annelids and molluscs.

Little is known about the breeding and foraging ecology of little terns, however BIAs for foraging and resting have been identified across the NWMR (**Figure 8-2**), with a peak in breeding activity between June and October.

Roseate tern (nearshore seabird)

The roseate tern (*Sterna dougallii*) is listed migratory under the EPBC Act and BC Act. This species is generally sub-tropical in distribution and there are many breeding populations in the NWMR, including Ashmore Reef, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands.

The largest roseate tern breeding colony in Western Australia is in the Houtman Abrolhos Islands (Surman & Nicholson, 2009). Large colonies breed within the Lowendal Island and Montebello Island region where there is a stronghold for this species (Higgins & Davies 1996). A large breeding colony has also been recorded on Goodwyn Island on the Dampier Archipelago (Higgins & Davies 1996). Peak breeding times across the NWMR are between May to August.

Birds are known to usually move away from breeding colonies following breeding, but their non-breeding range is not well defined (Higgins & Davies 1996). Many non-breeding roseate terns have been observed at several remote locations in the Kimberley and there are high numbers also recorded at the Eighty Mile Beach Ramsar site (Surman pers obs).

Roseate terns will forage diurnally, up to 60 km from their colonies and always over deeper shelf waters, rather than shallow coastal areas (Surman & Wooller, 2003). Roseate terns will also readily raft (roost in flocks on the sea surface) after foraging episodes (Commonwealth of Australia, 2020).

Roseate terns predominately eat small pelagic fish taken by plunge diving or surface dipping, typically foraging in dense flocks overflying predatory fishes that push their prey to the surface. Roseate terns may plunge to 20 cm depth.

Breeding BIAs across the NWMR are associated with known breeding colonies on islands, while a resting BIA encompasses Eighty Mile Beach (**Figure 8-2**).

Caspian tern

The Caspian tern (*Hydroprogne caspia*) is listed migratory under the EPBC Act and BC Act. It is moderately common across coastlines of the NWMR and offshore islands (Johnstone et al*.,* 2013).

Breeding occurs as solitary nests or in colonies of up to 52 breeding pairs mainly on islands, including North Turtle Island, Dampier Archipelago including Enderby Island, and Frazer Island, and occasionally on mainland coasts, such as Cape Preston and the Northwest Cape, from late March to early November (Johnstone et al*.,* 2013).

During breeding, adults can forage up to 60 km from the colony during this period to catch fish and meet their elevated energetic requirements at this time (Burger et al. 1996; Balance et al*.,* 2008). The Caspian tern is a diurnal forager, with the length and frequency of foraging trips, as well as relative time spent foraging or attending chicks, changing with food resource availability (Dunlop & McNeill 2017).

Caspian tern usually forage in shallow, sheltered waters, by plunge-diving for various prey species (Serventy et al*.,* 1971).

Although foraging BIAs occur in the SWMR, no BIAs for this species have been identified in the NWMR.

Greater crested tern

The greater crested tern (*Thalasseus bergii*) is listed migratory under the EPBC Act and BC Act. The species is widespread along coastlines of the NWMR and offshore islands (Johnstone et al*.,* 2013).

Many populations remain sedentary in their breeding areas or disperse locally (del Hoyo et al*.,* 1996), although some are more migratory (Urban et al*.,* 1986). The species breeds in large, dense colonies, or in small groups of fewer than ten pairs amidst colonies of other species, such as silver gull (del Hoyo et al. 1996). Colonies are located on islands, including those as far offshore as Bedout, Legendre and the Montebello and Lowendal Islands (Johnstone et al*.,* 2013). Adult breeders have shown both high site fidelity and also flexibility in their breeding localities depending upon the spatial and temporal reliability of food resources (Crawford et al*.,* 2002).

Breeding occurs from late March to May (Johnstone et al*.,* 2013). During breeding, greater crested terns conduct short, diurnal foraging trips close (<40 km) to the colony (Surman & Wooller 2003, Rock et al. 2007; McLeay et al*.,* 2010) with most foraging behaviour displayed by individuals at distances >5 km (McLeay et al*.,* 2010).

The chicks are predominantly fed pelagic fish, a diet that varies among colonies and years (Chiaradia et al*.,* 2002; McLeay et al*.,* 2009). Adults may forage more widely on inshore reef fish (Surman & Wooller, 2003), crustaceans and cephalopods using a plunge diving method (Commonwealth of Australia, 2020a).

Although there is known habitat use in the NWMR, there are no designated BIAs for the greater crested tern in the NWMR.

8.2.1 Moderate occurrence seabird species

Species descriptions for moderate occurrence key pelagic and nearshore seabird species are summarised in **Table 8-2.**

Table 8-2 Species summary for moderate occurrence pelagic and nearshore seabird species within the NWMR.

Species	NMWR presence	Predominant feeding behaviour	Diet
Amsterdam albatross	Year-round low-density presence associated with foraging breeding and non-breeding individuals	Diurnal and nocturnal Dipping, surface seizing, diving to depths ≥2 m	Squid, fish and crustaceans
Flesh-footed shearwater	Non-breeding, migration: Jun – Aug	Diurnal and nocturnal Pursuit-plunging, surface-seizing	Fish, cephalopods
Soft-plumaged petrel	Non-breeding, migration: Jan-June	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Streaked shearwater	Non-breeding: Dec – Apr	Diurnal and nocturnal Surface-seizing	Fish, squid, crustacean
Wilson's storm petrel	Non-breeding: June – Dec	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Common tern	Non-breeding: Aug – Mar	Diurnal	Fish

		Surface-plunging, dipping.	

8.2.2 Biologically Important Areas for seabirds in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024) identified BIAs representing important life cycle stages and behaviours for nine species of seabird in the NWMR. These are presented in **Table 8-3**.

Table 8-3 Seabird BIAs within the NWMR (source: AMSIS, 2024 [accessed on 12/08/24]

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
Australia fairy tern	-	✓	✓	-	No foraging BIAs in the NWMR Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and Bernier Island of Shark Bay	-
Wedge-tailed shearwater	✓	✓	✓	Widespread area of the NWMR offshore and inshore waters	Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	-	-
Great frigatebird	✓	-	-	Ashmore Reef, Adele Island	-	-	-
Lesser frigatebird	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Brown booby	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Red-footed booby	✓	-	-	Adele Island, Ashmore Reef	-	-	-
Little tern	✓	✓	-	Rowley Shoals, Adele Island	-	-	-
Roseate tern	✓	✓	✓	-	No foraging BIAs in the NWMR Foraging (provisioning young) and foraging BIAs located in the SWMR – Houtman Abrolhos Islands the	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	Eighty Mile Beach

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
					nearest BIA to the NWMR		
White-tailed tropicbird	✓	✓	-			Rowley Shoals Ashmore Reef	

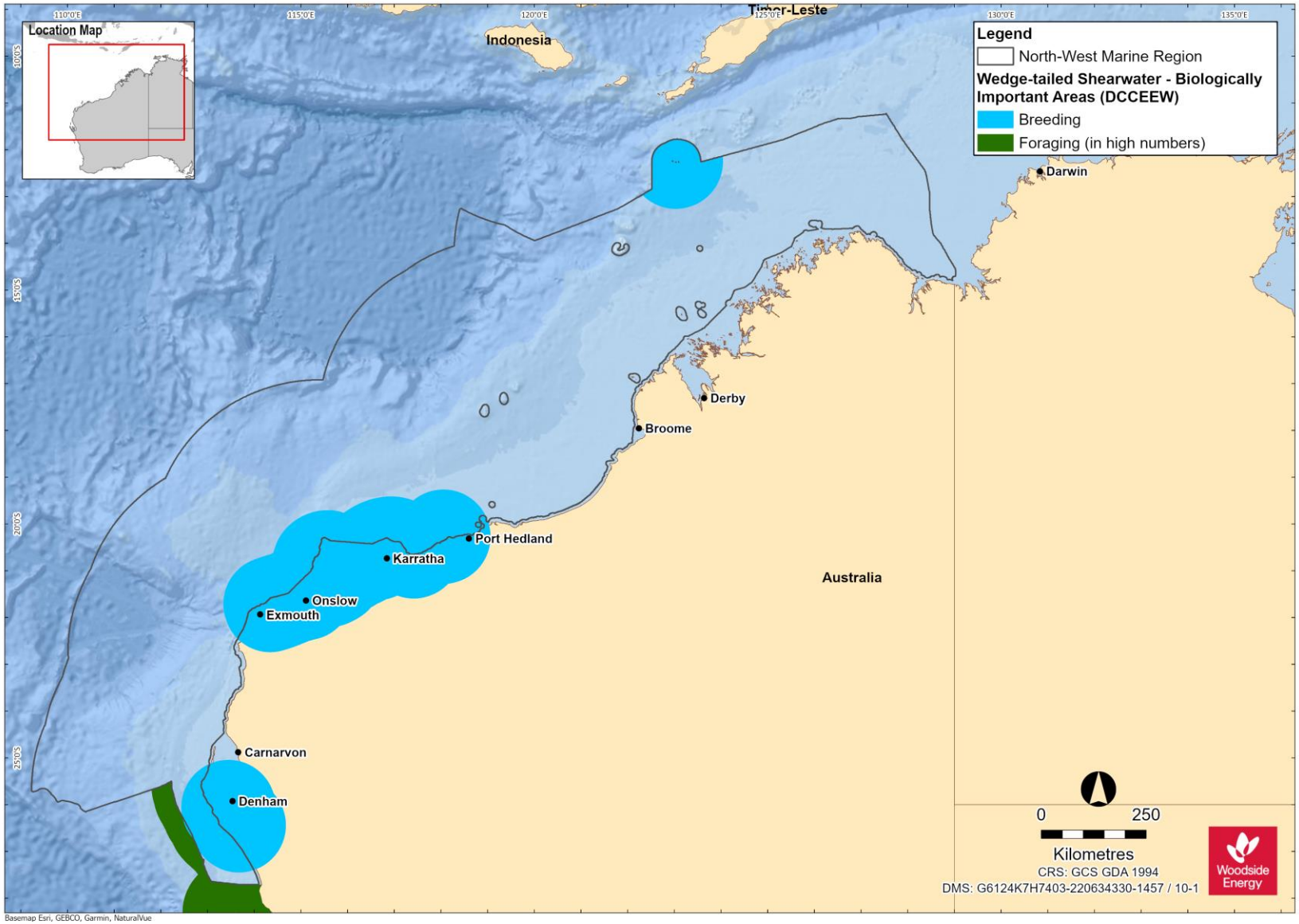


Figure 8-1 Wedge-tailed shearwater BIAs for the NWMR (data source: DCCEEW, 2024b)

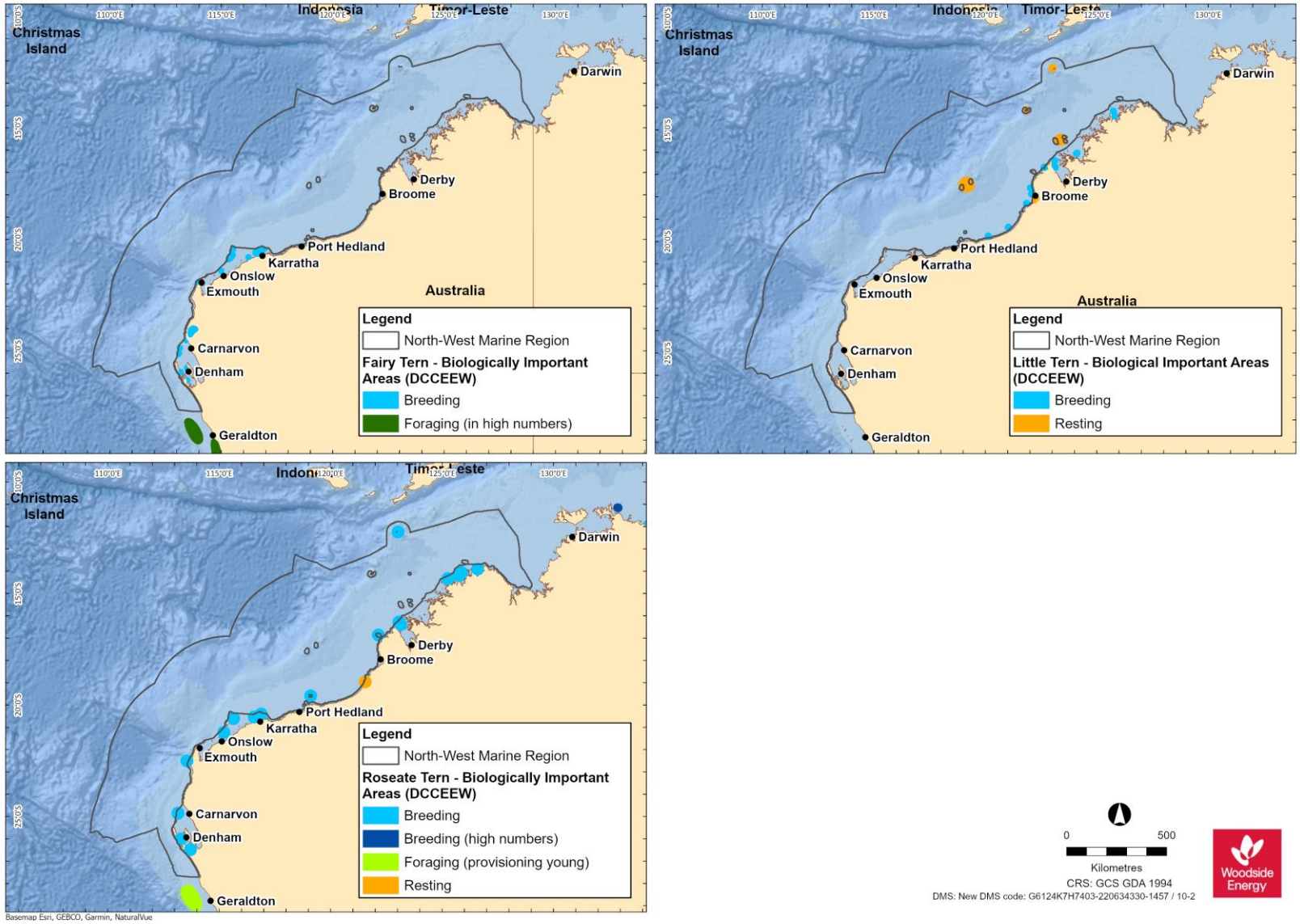


Figure 8-2 Tern species BIAs for the NWMR (data source: DCCEEW, 2024b)

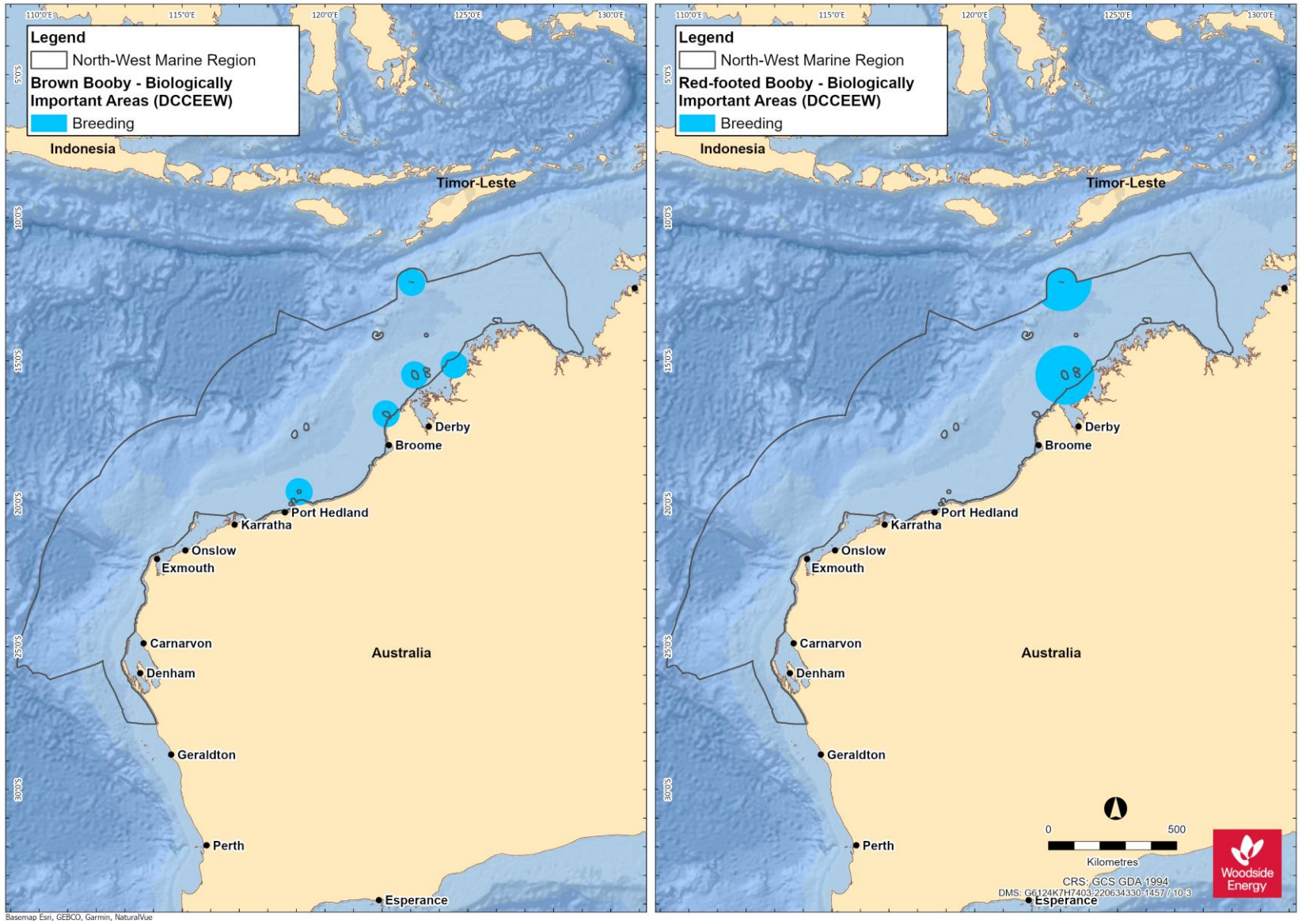


Figure 8-3 Red-footed and brown booby BIAs for the NWMR (data source: DCCEEW, 2024b)

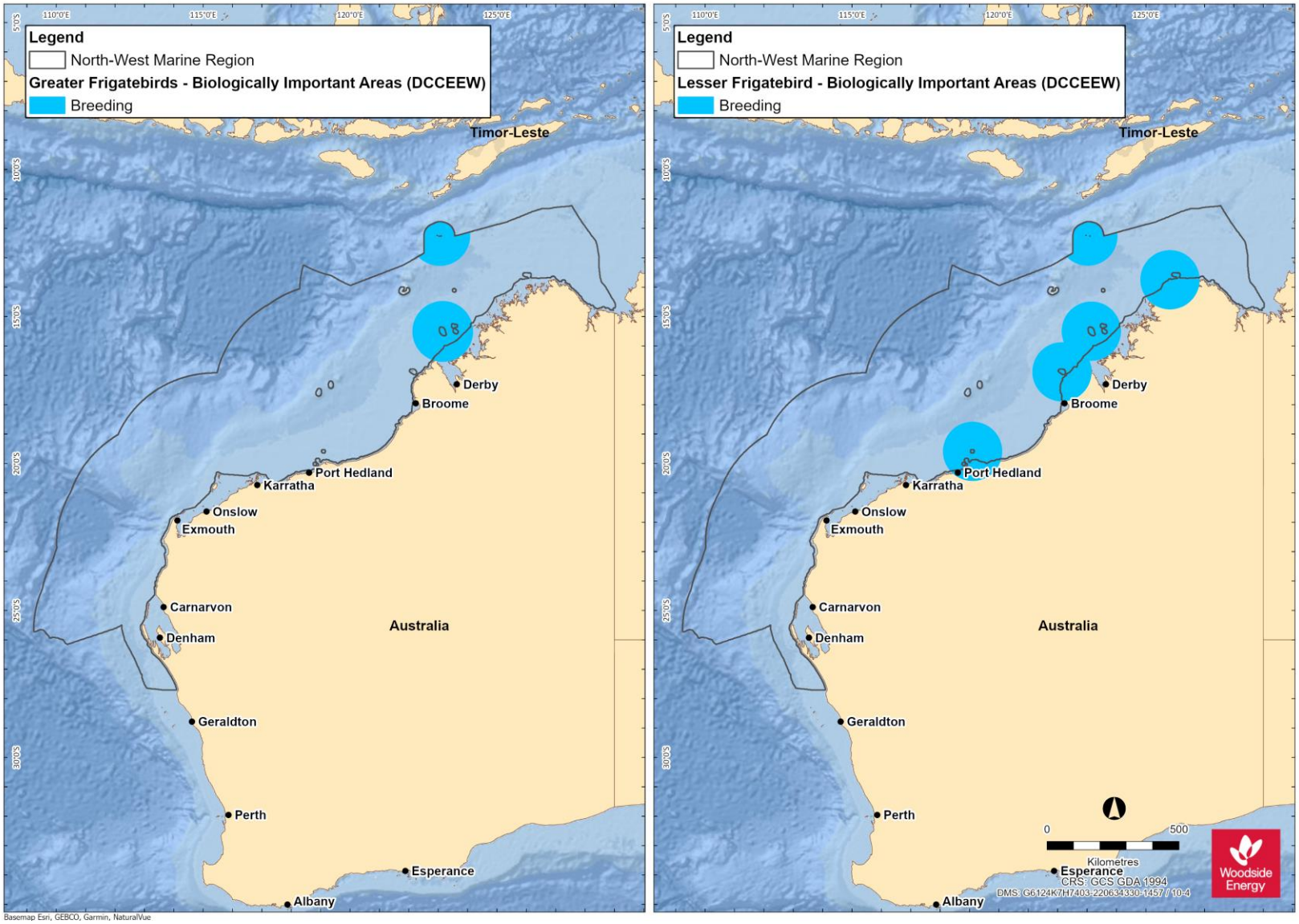


Figure 8-4 Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)

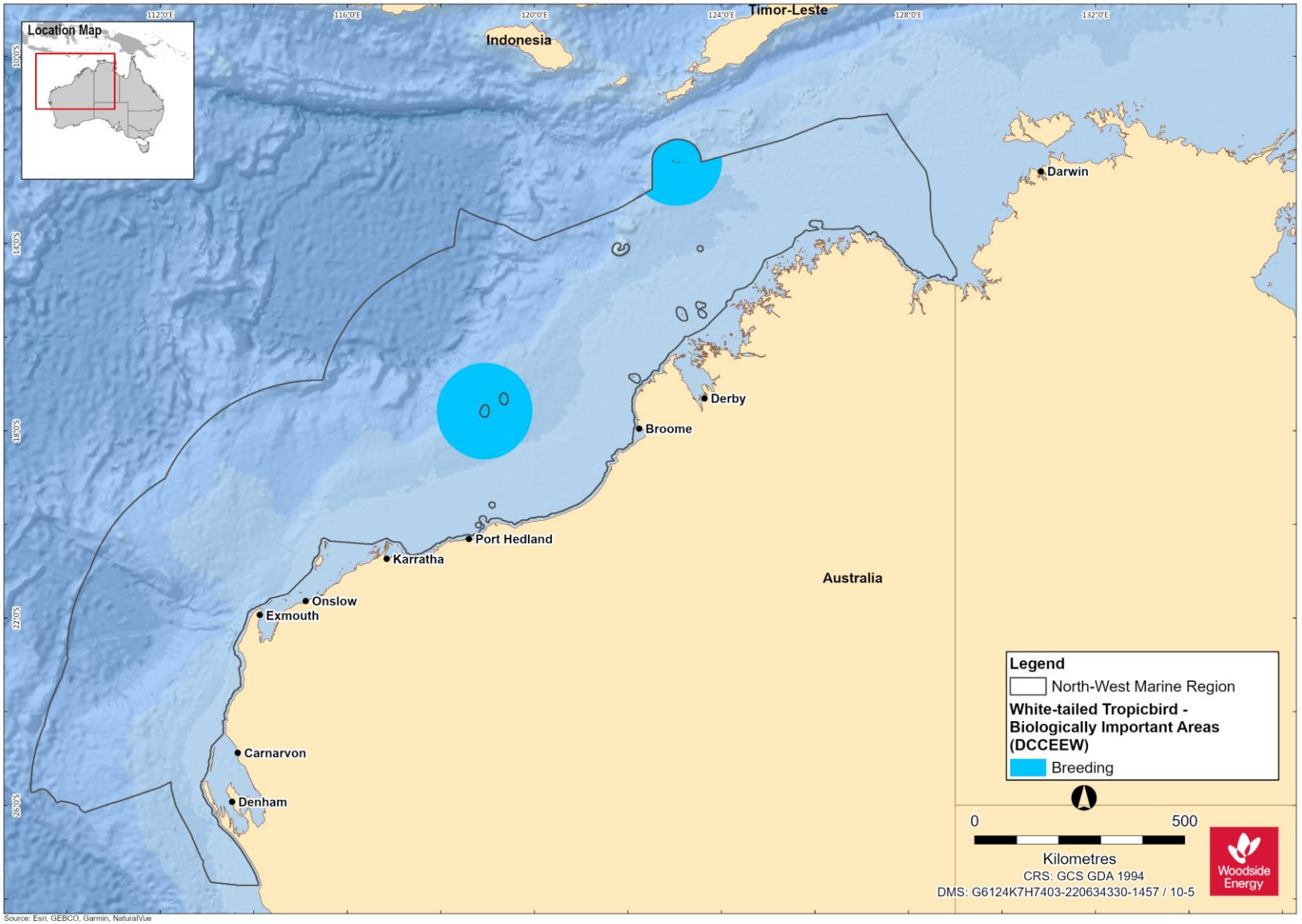


Figure 8-5 White-tailed tropicbird BIAs for the NWMR (data source: DCCEEW, 2024b)

8.2.3 Seabird Summary for NWMR

8.2.3.1 Browse

The Browse activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- great and lesser frigatebirds (breeding/foraging);
- brown booby (breeding/foraging);
- red-footed booby (breeding/foraging);
- little tern (breeding/foraging);
- roseate tern (breeding and resting); and,
- white-tailed tropicbird (breeding).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.3.2 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging);
- lesser frigatebird (breeding/foraging);
- brown booby (breeding/foraging);
- white-tailed tropicbird (breeding);
- little tern (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.3.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for three threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are listed and described in **Table 8-3**.

8.3 Shorebirds

Shorebirds (migratory and resident species) are generally associated with wetland or coastal environments, and the NWMR hosts many shorebird species, particularly in the Austral summer (refer to **APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and** NMR for the EPBC Act PMST reports on listed species of shorebirds). Shorebirds may use coastal environments for feeding, nesting or migratory stopovers. In coastal environments, shorebirds generally feed

during low tide on exposed intertidal mud and sand flats, and roost in suitable habitat above the high-water mark.

The NWMR is situated within the East Asian – Australian Flyway (EAAF), a geographic region supporting populations of migratory shorebirds throughout their annual cycle. The EAAF extends from breeding grounds in the Russian tundra, Mongolia and Alaska southwards through east and south-east Asia, to non-breeding areas of Indonesia, Papua New Guinea, Australia and New Zealand (Weller and Lee, 2017). All shorebird species identified undertake annual migrations from breeding sites in the northern hemisphere to more southern non-breeding sites within the EAAF (Bamford et al 2008).

The EAAF encompasses a large proportion of the NWMR. Migratory shorebirds may migrate through the offshore areas of the NWMR between overwinter grounds in Australia and breeding sites in the northern hemisphere (Bamford et al. 2008). Peak migration occurs between March and May (northern migration) and August and November (southern migration) (Bamford et al. 2008). Migration routes of some migratory shorebird species have been characterised using band recoveries (Minton et al 2006), however the migration pathways taken between sightings are poorly understood.

Migratory shorebird species are present in Australia during the non-breeding period (December to February), in coastal and inland habitats where adult birds build up the energy reserves necessary to support northward migration and subsequent breeding (Commonwealth of Australia, 2015c). During this time, individuals must maintain an energy intake greater than their energy expenditure to recover from the southward migration, to allow moulting, and to build fat reserves in preparation for the northward migration (Commonwealth of Australia, 2015c). The high energy demands of migration means that both foraging and resting during the non-breeding period are vital for individual fitness and survival.

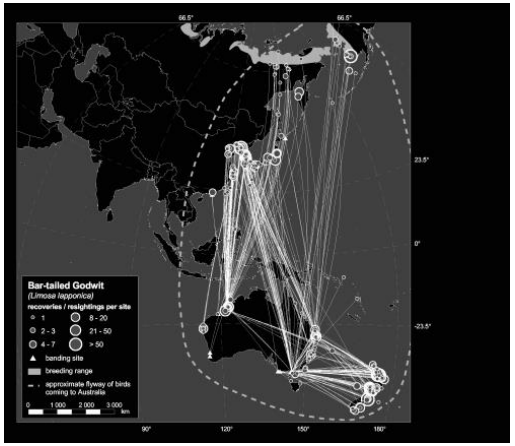
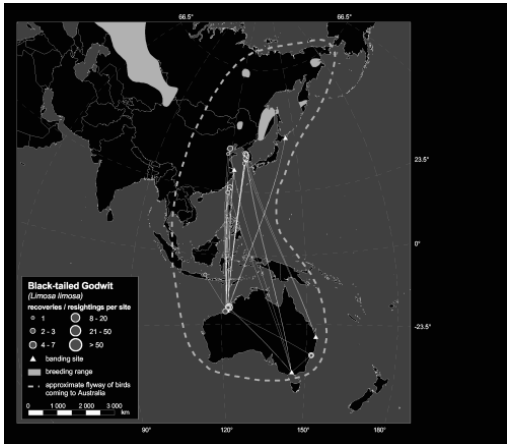
Due to differences in coastal or wetland habitat requirements between roosting and foraging behaviours, areas used most by migratory shorebirds usually comprise networks of foraging and roosting habitats. Shorebirds move between areas of this network depending on the time of day, availability of resources, levels of disturbance and environmental conditions (Commonwealth of Australia, 2015c). Displacement from one habitat or the other may result in utilisation of sub-optimal habitat and/or increase energetic demands via increased distance between habitats.

Within the EAAF, “a wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird” (Ramsar Convention Bureau, 2000). All shorebirds identified as high occurrence key species occur in shoreline habitats within the NWMR for at least part of their non-breeding season in Australia.

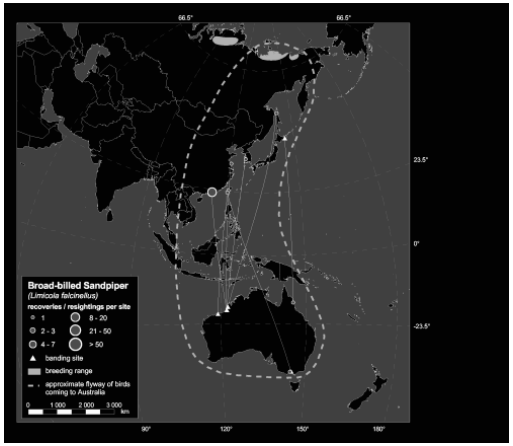
Ashmore Reef is documented as a BIA for migratory shorebirds in the NWMR (DSEWPAC, 2012a).

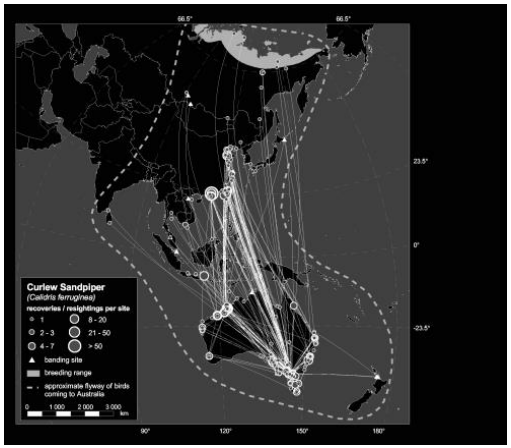
Species descriptions, including information on migration routes where available, for key high and moderate occurrence shorebird species are provided in **Table 8-4** and **Table 8-5**. It should be noted that Minton et al*.,* (2006) did not report on the Pilbara region or Exmouth Gulf, so the migratory pathways may be incompletely depicted.

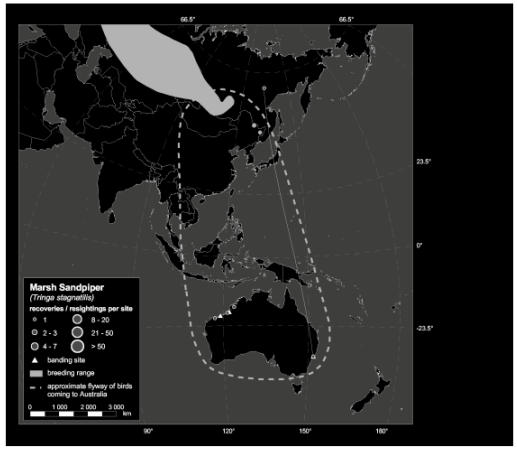
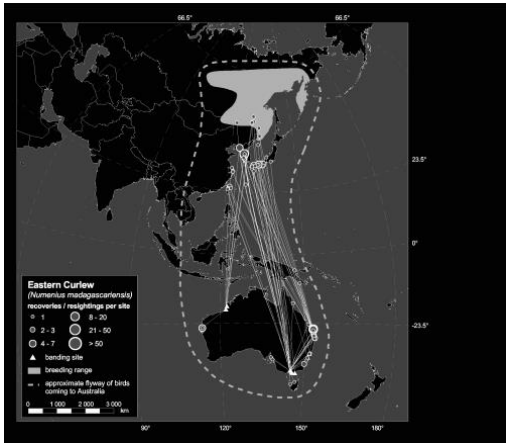
Table 8-4 Species summary for high and selected moderate occurrence key shorebird species.

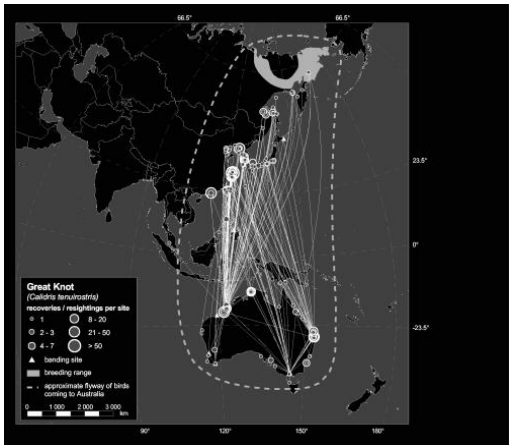
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Bar-tailed godwit[21]	Widespread around the coast as far east as Derby, with a few scattered records elsewhere in the Kimberley *Internationally important site:* • Roebuck Bay • Eighty Mile Beach	Sandy beaches, sandbars, spits and also in near-coastal saltmarsh	Tidal estuaries and harbours	Worms, molluscs, crustaceans, insects and some plant material	
Black-tailed godwit	Found in coastal regions of all States and Territories of Australia *Internationally important site:* • Roebuck Bay	Claypan	Intertidal mudflats or sandflats	Annelids, crustaceans, arachnids, fish eggs and spawn and tadpoles	

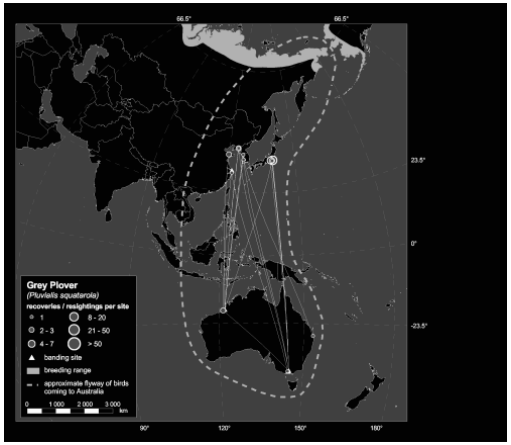
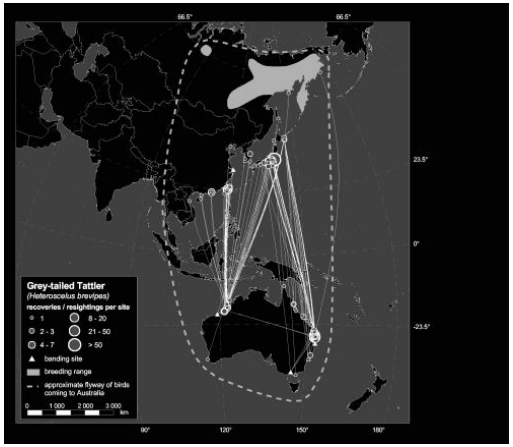
[21] Nominate species *Limosa lapponica.* Subspecies which may occur includes *L. l menzbieri,* which is listed Critically Endangered under the EPBC Act. Specific information on *L. l menzbieri* is lacking, but information regarding habitat use and diet for the nominate species is considered applicable.

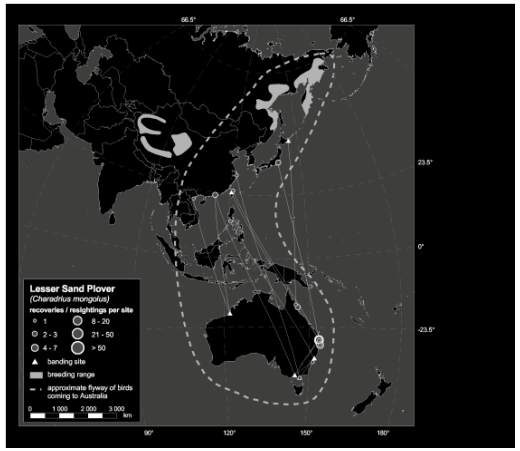
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Broad billed sand piper	Regular visitor to coasts of the Pilbara and Kimberley between Onslow and Broome *Internationally important site:* • Port Hedland Saltworks	Sheltered sandy, shelly or shingly beaches	Mudflats, mangroves	Worms, including polychaetes, molluscs, crustaceans, insects and seeds	
Common redshank	Records in the Gascoyne region, Coral Bay and Carnarvon Widespread from the Dampier Saltworks to Roebuck Bay and Broome Ashmore Reef	Sheltered coastal wetlands such as bays, river estuaries, lagoons, inlets and saltmarsh	Bare mud or sand, or on algal deposits, round the edges of wetlands	Worms, molluscs, crustaceans, arachnids and insects	Not available

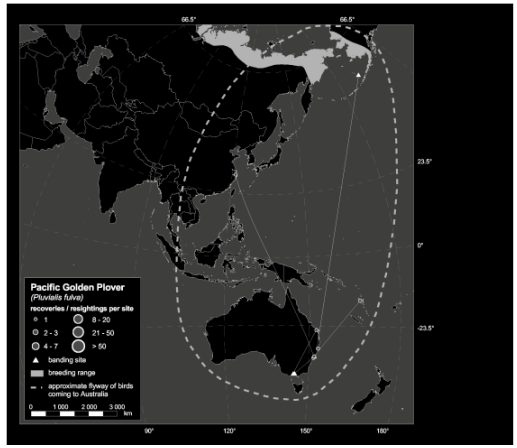
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Curlew sandpiper	Widespread around coastal and subcoastal plains Non-breeding one year old birds may remain in Australia rather than migrating north *Internationally important site:* • Dampier Saltworks • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands	Mudflats and nearby shallow water	Worms, molluscs, crustaceans, and insects, as well as seeds	

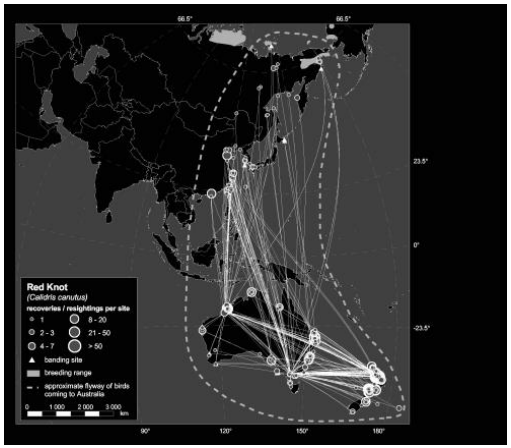
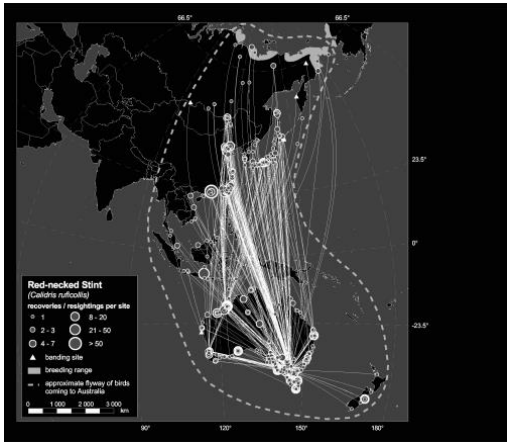
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Marsh sandpiper	Widespread, notable areas include Eighty Mile Beach, Port Hedland Saltworks	Tidal mudflats	Mudflats, marshy vegetation	Molluscs, crustaceans and insects	
Eastern curlew	Continuous distribution from Barrow Island and Dampier Archipelago through the Kimberley region *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy spits, sandbars and islets, beaches near the high-water mark, coastal vegetation including low saltmarsh or mangroves	Soft sheltered intertidal sandflats or mudflats, saltflats and saltmarsh, in proximity to mangroves, among rubble on coral reefs, and beaches near the tideline	Crustaceans small molluscs, insects	

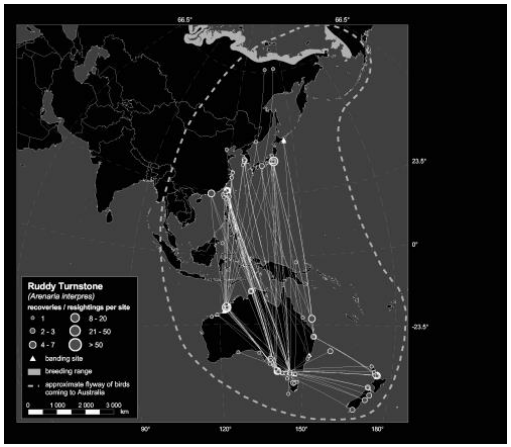
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Great knot	Common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Roosts in large groups in open areas, often at the water's edge or in shallow water close to feeding grounds	Sheltered coastal habitats with large intertidal mudflats or sandflats	Bivalves, gastropods, crustaceans and other invertebrates	
Greater sand plover	Widespread between North-west Cape and Roebuck Bay *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sand-spits and banks on beaches or in tidal lagoons	Surface of wet sand or mud on open intertidal flats of sheltered embayments, lagoons or estuaries	Molluscs, worms, crustaceans and insects	

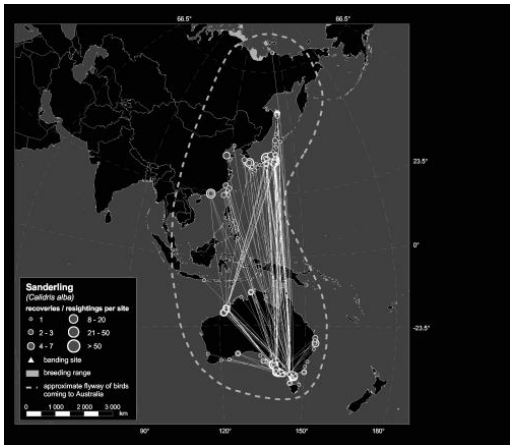
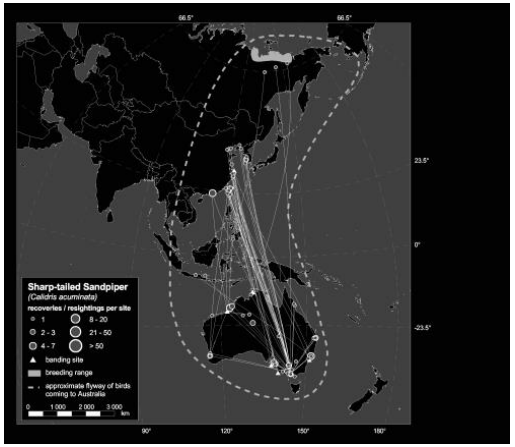
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Grey plover	Widespread in coastal areas across Australia *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy habitats including unvegetated sandbanks or sand-spits, sheltered beaches, estuaries or lagoons	Large areas of exposed mudflats and beaches of sheltered coastal shores	Molluscs, insects and their larvae, crustaceans and polychaete worms	
Grey-tailed tattler	Widespread from Houtman Abrolhos and the mainland adjacent to the Kimberley *Internationally important site:* • Barrow Island • Roebuck Bay • Eighty Mile Beach • Lacepede Islands	Branches of mangroves, snags or driftwood	Shallow water on hard intertidal substrates, such as reefs and rock platforms, in rock pools and among rocks and coral rubble	Polychaetes, molluscs, crustaceans, insects and, occasionally, fish	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Lesser Sand Plover	Widespread, internationally important site: • Eighty Mile Beach • Roebuck Bay • Broome • Port Hedland Saltworks	Beaches, banks, spits of sand or shell, occasionally rocky spits, islets and reefs	Exposed intertidal sandflats and mudflats of beaches or estuaries, occasionally shallow water in saltworks	Molluscs, worms, crustaceans and insects	
Oriental plover	Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia *Internationally important site:* • Dampier Saltworks • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Soft wet mud or in shallow water of beaches and tidal mudflats	Short grass, hard stony bare ground, mudflats or among beachcast seaweed on beaches	Insects, including termites, beetles, grasshoppers, crickets	Not available

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Oriental pratincole	Widespread along the coasts of the Pilbara and Kimberley *Internationally important site:* • Eighty Mile Beach • Roebuck Plains	Bare areas such as claypans or areas with low vegetation, such as saltmarsh	Open plains, floodplains or short grassland, artificial wetlands (saltworks), beaches, mudflats and islands, or around coastal lagoons Usually feeds aerially, at heights varying from just above the ground up to 300 m	Insects, including dragonflies, cicadas, beetles, moths, ants, termites, locusts, grasshoppers, flies, bees and wasps	Not available
Pacific golden plover	Widespread along the coasts of the Pilbara and Kimberley Nationally important site: • Eighty Mile Beach	Sandy beaches and spits, rocky points, islets, exposed reef, occasionally mangrove and saltmarsh vegetation, beachcast seaweed, levee banks and saltwork evaporation ponds	Sandy, muddy and rocky shores, sheltered estuaries and lagoons, occasionally saltmarsh, mangrove or pasture	Molluscs, polychaete worms, insects, insect larvae, spiders, crustaceans, occasionally seeds, leaves, lizards, bird eggs and fish	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Red knot	Large numbers regularly recorded in north-west Australia *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy beaches, spits and islets, and mudflats close to feeding grounds	Soft substrate near the water edge including intertidal mudflats and sandflats exposed by low tide	Worms, bivalves, gastropods, crustaceans and echinoderms	
Red-necked stint	Widespread in coastal areas across Australia *Internationally important site:* • Barrow Island • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Sheltered beaches, spits, banks or islets of sand, mud, coral or shingle, occasionally in saltmarsh or other vegetation	Feed in dense flocks on bare wet mud such as intertidal mudflats or sandflats, or in very shallow water	Marine worms, molluscs, snails and slugs, shrimps, spiders, beetles, flies and ants	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Ruddy turnstone	Found in most coastal regions across Australia *Internationally important site:* • Barrow Island • Eighty Mile Beach • Roebuck Bay • Lacepede Islands	Beaches above the tideline, among rocks, shells, beachcast seaweed or other debris	Between lower supralittoral and lower littoral zones of foreshores. Often forage among banks of stranded seaweed or other tide-wrack. Occasionally forage on exposed rocky platforms, coral reefs and mudflats	Insects, worms, crustaceans, molluscs, and spiders Occasionally been known to eat fish, birds' eggs and carrion and human food scraps	
Ruff	Periodically recorded in Port Hedland, Kununurra and the Argyle Diamond Mine	Wetlands with exposed mudflats and short dense vegetation	Exposed mudflats with shallow water and dry mud	Moss, plant fibre, seeds, annelid worms, molluscs, crustaceans, spiders, insects, fish and amphibians	Not available

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Sanderling	Occur most of the NWMR coast as far east as Derby *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Bare sand high on the beach clumps of washed-up kelp coastal dunes rocky reefs and ledge	Open sandy beaches exposed to open sea-swell, exposed sandbars and spits and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed.	Plants, seeds, worms, crustaceans, spiders, insects. Occasionally on medusae, fish, larger molluscs and crustaceans taken as carrion	
Sharp-tailed sandpiper	Widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara to Kimberley *Internationally important site:* • Port Hedland Saltworks • Eighty Mile Beach	Edges of wetlands, on wet open mud or sand, in shallow water, or in short sparse vegetation, such as grass or saltmarsh	Edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water. Also forage among inundated vegetation of saltmarsh, grass or sedges	Seeds, worms, molluscs, crustaceans and insects	

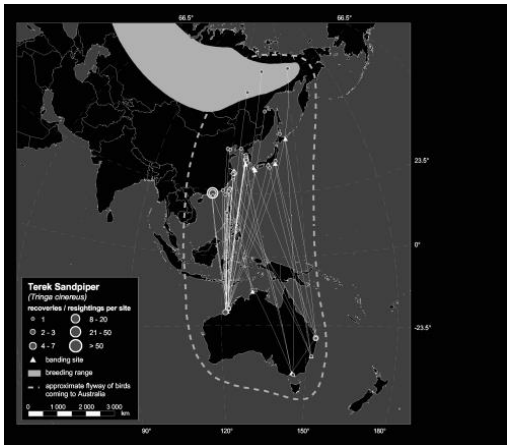
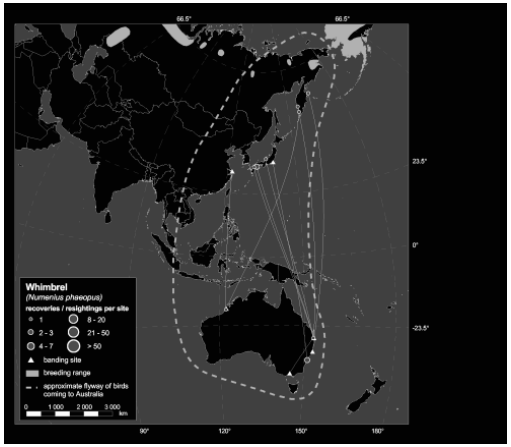
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Terek sandpiper	The species is widespread in the Pilbara and Kimberley, from Dampier to Wyndham, with occasional records around Shark Bay *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	In or among mangroves, may perch in branches or roots up to 2 m from the ground, or in shade beneath	Soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons	Crustaceans, insects, seeds, molluscs and arachnids	
Whimbrel	Widespread from Carnarvon to the north-east Kimberley Primarily coastal distribution. There are also scattered inland records of Whimbrels in all regions *Internationally important site:* • Roebuck Bay	Regularly roost in mangroves and other structures flooded at high tide. May also roost on ground of muddy, sandy or rocky beaches; rocky islets and coral cays.	Intertidal mudflats, muddy banks of estuaries and in coastal lagoons, open unvegetated areas or among mangroves. Occasionally on sandy beaches or among rocks	Annelids, crustaceans and, rarely, vertebrates (e.g. small fish, little tern chicks)	

Table 8-5 Species summary for moderate occurrence key shorebird species

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Asian dowitcher	Regular visitor to the north-west between Port Hedland and Broome *Internationally important sites:* • Roebuck Bay and Port Hedland saltworks	Coastal lagoons, estuaries and tidal creeks	Intertidal mud flats	Polychaete worms and larvae, also insect larvae and molluscs
Australian painted snipe	Widespread in low numbers	Shallow freshwater wetlands with bare mud and dense canopy cover	Dense vegetation cover, occasionally mudflats and grassland	Vegetation, seeds, insects, worms, molluscs and crustaceans
Little curlew	Widespread with distribution concentrated along the northern coast from Port Hedland during the non-breeding season. *Internationally important sites:* • Roebuck Plains • Roebuck Bay • Anna Plains • Derby Sewage Ponds • Parry Floodplain.	Short, dry grassland, and occasionally dry saltmarshes, coastal swamps, mudflats or sandflats in estuaries, or on the beaches of sheltered coasts.	Short, dry grassland and sedgeland with shallow freshwater pools or seasonal inundation.	Insects, seeds and berries.
Common greenshank	Occurs in all types of wetlands and has the widest distribution of any shorebird in Australia *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Wetlands, shallow pools and puddles, or slightly elevated on rocks, sandbanks or small muddy islets	Edges of wetlands, in soft mud on mudflats, in channels, among pneumatophores of mangroves or other sparse, emergent or fringing vegetation, such as sedges or saltmarsh	Molluscs, crustaceans, insects, and occasionally fish and frogs

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Common sandpiper	Widespread in low numbers	Rocks or in roots or branches of vegetation, especially mangroves	Bare soft mud at the edges of wetlands	Molluscs, crustaceans and insects
Pectoral sandpiper	Low numbers recorded across the Gascoyne, Pilbara and Kimberley regions	Coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands	Bare soft mud at the edges of wetlands	Algae, seeds, crustaceans, arachnids and insects
Wood sandpiper	NWMR supports largest numbers in Australia. Notable areas include Parry floodplain, Shark Bay	Low trees, grassy hillocks	Bare soft mud at the edges of wetlands	Insects and molluscs
Long-toed stint	Widespread along the coasts of the Pilbara and Kimberley	Shallow inland wetlands	Wetland or islets with wet mud or shallow water and short vegetation	Seeds, molluscs, crustaceans, insects, occasionally algae
Pin-tailed snipe	Recorded in the Pilbara, Port Hedland, Myaree Pool, Maitland River and near Karratha	Wide variety of wetland habitats including flooded paddy-fields, wet grasslands, seepage swamps and marshland	Muddy shorelines of swamps and along streams	Molluscs, adult and larval insects, earthworms and occasionally crustaceans, seeds and other plant matter

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Swinhoe's snipe	Recorded in the Pilbara, Kimberley, Mount Goldsworth, Mount Blaize and near the Mitchell Plateau	Grasses and rushes around the edge of fresh and brackish marshes	Grasses and rushes near the water edge, in addition to hummocks or on mudflats around seepage areas	Earthworms, adult and larval insects

8.4 Other marine birds

Species descriptions for high occurrence key other marine bird species are summarised in **Table 8-6**.

Table 8-6 Species summary for high occurrence key other marine bird species

Species	NWMR presence		Predominant feeding behaviour	Diet
Fork-tailed swift	*Non-breeding:* Oct – Apr Widespread in coastal areas as far north as Carnarvon, including some on nearshore and offshore islands. Scattered along the Pilbara coast to the east Kimberley region	Aerial forager, flying anywhere from 1 m to 300 m above the ground to forage Typically feed in flocks ranging from 10 to 1,000 birds	Insectivorous	
Osprey	*Breeding:* April to February, though depends on latitude. NWMR individuals breeding early in season compared to SWMR *Non-breeding*: remain in breeding territories Continuous distribution of the species around the coast except for a possible gap at Eighty Mile Beach	Hover momentarily and then dive down, sometimes in stages, before snatching prey from near the surface with the feet or by plunging into the water feet first	Fish, especially mullet where available Rarely take molluscs, crustaceans, insects, reptiles, birds and mammals.	

9. THREATENED AND MIGRATORY SPECIES SEASONAL PRESENCE

Seasonal sensitivity for key threatened and migratory species in the NWMR presented in **Table 9-1.** The timing presented is displayed as a broad representation for the NWMR, with location specific seasonality presented within Environment Plans (EPs).

Table 9-1 Seasonal sensitivity of key threatened and migratory species in the NWMR

Species	January	February	March	April	May	June	July	August	September	October	November	December
Fishes, sharks and rays												
Whale shark - foraging (northward from Ningaloo) [1]												
Whale shark - foraging (high density prey, Ningaloo Reef)[2]												
Dwarf sawfish - reproduction[3]												
Dwarf sawfish - foraging[4]												
Largetooth (freshwater) sawfish - reproduction (pupping)[5]												
Largetooth (freshwater) sawfish - foraging												
Green sawfish (reproduction)												
Green sawfish (foraging)												
Marine reptiles- turtle nesting												
Green turtle												
Ashmore Reef Stock (G-AR)[6]												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Scott Reef-Browse Island Stock (G-ScBr)[7]												
NWS Stock (G-NWS)[8]												
Hawksbill turtle												
Western Australia Stock (H-WA)[9]												
Flatback turtle												
Cape Domett Stock (F-CD)[10]												
South-west Kimberley Stock (F-swKim)[11]												
Pilbara Stock (F-Pil)[12]												
Unknown genetic stock Kimberley, Western Australia[13]												
Loggerhead turtle												
Western Australia Stock (LH-WA)[14]												
Cetaceans												
Fin whale[15]												
Humpback whale - northern migration[16]												
Humpback whale - southern migration[17]												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Humpback whale - reproduction (nursing, Kimberley coast)[18]												
Omura's whale[19]												
Pygmy blue whale - northern migration[20]												
Pygmy blue whale - southern migration[21]												
Southern Right Whale (calving/presence in NWMR)[22]												
Seabirds (high occurrence seabirds with designated BIAs)												
Wedge-tailed shearwater - breeding / foraging *fledgling emergence (first two weeks of April)				*								
Australian lesser noddy NWMR presence in non-breeding period *breeding – Ashmore Reef and Abrolhos, may forage in NWMR								*	*	*	*	*
Common noddy - breeding												
Bridled tern – breeding and foraging												
Australian fairy tern - breeding/foraging												
Great frigatebird- breeding / foraging	*	*	*	*	*	*	*	*	*			

Species	January	February	March	April	May	June	July	August	September	October	November	December
*possibly present in NWMR in non-breeding and foraging in breeding season												
Lesser frigatebird - breeding / foraging *possibly present in NWMR in non-breeding and foraging in breeding season	*	*	*	*	*	*	*	*	*			
Brown booby - presence in NWMR (breeding / foraging) Present NWMR year-round (breeding at Ashmore Reef, Adele Island, Lacepedes between Jan-Mar (protracted through to Oct at Ashmore Reef)												
Red-footed booby - presence in NWMR (breeding / foraging) Breed at Ashmore Reef and Adele Island, recorded breeding year-round at Ashmore Reef												
Little tern - breeding / foraging maybe present in NWMR outside breeding season – foraging and resting												
Roseate tern - breeding												
Caspian tern – breeding Dampier Archipelago and North-west Cape												
Greater crested tern												
White-tailed and Red-tailed tropicbird - breeding largest breeding populations on Christmas Island												
	Peak period (reliable / predictable).											
	Species present / undertaking biologically important behaviour in the NWMR.											
	Species not likely to be present or undertaking biologically important behaviour in NWMR.											

Species	January	February	March	April	May	June	July	August	September	October	November	December

[1]Whale shark foraging northward from Ningaloo in Spring (DCCEEW, 2024b15). Migration along the north coast of WA also known to occur between July - November (TSSC, 2015d). Potential presence of whale sharks year-round at Ningaloo (Norman et al., 2017).

[2]Whale shark foraging (high density prey) Ningaloo April- June, Autumn (DCCEEW, 2024b15). March- July (TSSC, 2015d). Potential presence of whale sharks year-round at Ningaloo (Norman et al., 2017).

[3]Dwarf sawfish reproduction- potential to occur in all seasons (DCCEEW, 2024b15).

[4]Dwarf sawfish foraging- potential to occur in all seasons (DCCEEW, 2024b15).

[5]Largetooth (freshwater) sawfish pupping occurs from January to May (DCCEEW, 2024b15).

[6]Green turtle nesting Ashmore Reef Stock- year-round (peak: December- January) (CoA, 2017).

[7]Green turtle nesting Scott Reef-Browse Island Stock November- March (CoA, 2017).

[8]Green turtle nesting NWS Stock November- March (CoA, 2017).

[9]Hawskbill turtle nesting Western Australia Stock October- February (CoA, 2017).

[10]Flatback turtle nesting Cape Domett Stock- year-round (peak July- September) (CoA, 2017).

[11]Flatback turtle nesting South-west Kimberley Stock October- March (CoA, 2017).

[12] Flatback turtle nesting Pilbara stock October- March (CoA, 2017).

[13]Unknown stock nesting Kimberley May- July (CoA, 2017).

[14]Loggerhead turtle nesting Western Australia stock November- May.

[15]Fin whale presence NWMR May- October (Aulich et al., 2022). Migrating north from Cape Leewuin (SWMR) May- October. Present offshore Dampier August- October (Aulich et al., 2022).

[16]Humpback whale northern migration. Range June- September (DCCEEW, 2024b15; TSSC, 2015b; DSEWPaC, 2012a). Peak July- August (Salgado Kent et al. 2012).

[17]Humpback whale southern migration. Range July- November. Peak August- October. (TSSC, 2015b; Irvine & Salgado Kent, 2019; Salgado Kent et al., 2012; DSEWPaC, 2012a;

[18]Humpback whale- reproduction (nursing, Kimberley coast) Winter (DCCEEW, 2024b15). Breeding August- September (DSEWPac, 2012a; TSSC, 2015b). Calves present off Kimberley in October (Thums et al., 2018).

[19]Limited data however sightings reported year-round (Cerchio et al, 2019).

Species	January	February	March	April	May	June	July	August	September	October	November	December

[20] Pygmy blue whale northern migration April - August (DCCEEW, 2024b15; DSEWPaC, 2012a; McCauley et al., 2018; CoA, 2015a). Peak April- July (Thums et al., 2022)

[21]Pygmy blue whale southern migration October- December, possibly into January (DCCEEW, 2024b15; DSEWPaC, 2012a citing (McCauley and Jenner, 2010; McCauley et al., 2018; Thums et al*.,* 2022; CoA, 2015a). Peak November - December (Thums et al., 2022).

[22]Southern right whale calving and migratory presence in Exmouth Gulf (NWMR) June to September with peak months July and August (DCCEEW, 2024a)

All seabird seasonality information derived from BIA metadata, scientific publications and expert opinion (Worley, 2024).

10. KEY ECOLOGICAL FEATURES

Key ecological features (KEFs) are elements of the Commonwealth marine environment that are considered to be important for a marine region's biodiversity or ecosystem function and integrity. KEFs have been identified by the Australian Government based on advice from scientists about the ecological processes and characteristics of the area.

KEFs meet one or more of the following criteria:

- a species, group of species, or a community with a regionally important ecological role (e.g. a predator, prey that affects a large biomass or number of other marine species),
- a species, group of species or a community that is nationally or regionally important for biodiversity,
- an area or habitat that is nationally or regionally important for:
  - enhanced or high productivity (such as predictable upwellings – an upwelling occurs when cold nutrient-rich waters from the bottom of the ocean rise to the surface),
  - aggregations of marine life (such as feeding, resting, breeding or nursery areas), or
  - biodiversity and endemism (species which only occur in a specific area),
- a unique seafloor feature, with known or presumed ecological properties of regional significance.

Thirteen KEFs are designated within the NWMR, twelve KEFs within the SWMR and eight KEFs within the NMR. These KEFs have been identified in the Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) and outlined in **Table 10-1, Table 10-2** and **Table 10-3,** and **Figure 10-1, Figure 10-10-2** and **Figure** -10-3.

Table 10-1 Key Ecological Features (KEF) within the NWMR.

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Carbonate bank and terrace system of the Sahul Shelf	✓	-	-	Unique seafloor feature with ecological properties of regional significance Regionally important because of their role in enhancing biodiversity and local productivity relative to their surrounds. The carbonate banks and terraces provide areas of hard substrate in an otherwise soft sediment environment which are important for sessile species	The carbonate banks and terrace system of the Sahul Shelf are located in the western Joseph Bonaparte Gulf and to the north of Cape Bougainville and Cape Londonderry. The carbonate banks and terraces are part of a larger complex of banks and terraces that occurs on the Van Diemen Rise in the adjacent NMR. The bank and terrace system of the Van Diemen Rise covers approximately 31,278 km^2 and forms part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east. The feature is characterised by terrace, banks, channels and valleys (DSEWPAC, 2012c). The banks, ridges and terraces of the Van Diemen Rise are raised geomorphic features with relatively high proportions of hard substrate that support sponge and octocoral gardens. These, in turn, provide habitat to other epifauna, by providing structure in an otherwise flat environment (Przeslawski et al., 2011). Plains and valleys are characterised by scattered epifauna and infauna that include polychaetes and ascidians. These epibenthic communities support higher order species such as olive ridley turtles, sea snakes and sharks (DSEWPAC, 2012c)
Pinnacles of the Bonaparte Basin	✓	-	-	Unique seafloor feature with ecological properties of regional significance Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species Recognised as a biodiversity hotspot for sponges The Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 10-3**)	The Pinnacles of the Bonaparte Basin provide areas of hard substrate in an otherwise relatively featureless environment, the pinnacles are likely to support a high number of species, although a better understanding of the species richness and diversity associated with these structures is required (DSEWPAC, 2012a, 2012c). Covering >520 km^2 within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds, and foraging turtles (DSEWPAC, 2012a, 2012c)
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	✓	-	-	High productivity, biodiversity and aggregation of marine life that apply to both the benthic and pelagic habitats within the feature	Ashmore Reef is the largest of only three emergent oceanic reefs present in the north-eastern Indian Ocean and is the only oceanic reef in the region with vegetated islands. Ashmore contains a large reef shelf, two large lagoons, several channelled carbonate sand flats, shifting sand cays, an extensive reef flat, three vegetated islands—East, Middle and West islands—and

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
					surrounding waters. Rising from a depth of more than 100 m, the reef platform is at the edge of the NWS and covers an area of 239 km². Ashmore Reef and Cartier Island and the surrounding Commonwealth waters are regionally important for feeding and breeding aggregations of birds and other marine life; they are areas of enhanced primary productivity in an otherwise low-nutrient environment (DSEWPAC, 2012a). Ashmore Reef supports the highest number of coral species of any reef off the WA coast
Seringapatam Reef and the Commonwealth waters in the Scott Reef complex	✓	-	-	Support diverse aggregations of marine life, have high primary productivity relative to other parts of the region, are relatively pristine and have high species richness, which apply to both the benthic and pelagic habitats within the feature	Seringapatam Reef and the Commonwealth waters in the Scott Reef complex are regionally important in supporting the diverse aggregations of marine life, high primary productivity, and high species richness associated with the reefs themselves. As two of the few offshore reefs in the North-west, they provide an important biophysical environment in the region (DSEWPAC, 2012a)
Continental slope demersal fish communities	✓	✓	✓	High biodiversity of demersal fish assemblages, including high levels of endemism	The diversity of demersal fish assemblages on the continental slope in the Timor Province, the Northwest Transition and the North-west Province is high compared to elsewhere along the Australian continental slope (DSEWPAC, 2012a). The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last et al., 2005). The slope of the Timor Province and the Northwest Transition also contains more than 500 species of demersal fishes of which 64 are considered endemic (Last et al., 2005), making it the second richest area for demersal fishes throughout the whole continental slope. Demersal fish species occupy two distinct demersal biomes associated with the upper slope (225–500 m water depths) and the mid-slope (750–1000 m). Although poorly known, it is suggested that the demersal slope communities rely on bacteria and detritus-based systems comprised of infauna and epifauna, which in turn become prey for a range of teleost fishes, molluscs and crustaceans (Brewer et al., 2007). Higher-order consumers may include carnivorous fishes, deepwater sharks, large squid, and toothed whales (Brewer et al., 2007). Pelagic production is phytoplankton-based, with hot spots around oceanic reefs and islands (Brewer et al., 2007)

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Ancient coastline at 125 m depth contour	✓	✓	✓	Unique seafloor feature with ecological properties of regional significance Provides areas of hard substrate and therefore may provide sites for higher diversity and enhanced species richness relative to surrounding areas of predominantly soft sediment	Several steps and terraces as a result of Holocene sea level changes occur in the region, with the most prominent of these features occurring as an escarpment along the NWMR and Sahul Shelf at a water depth of 125 m. The ancient coastline is not continuous throughout the NWMR and coincides with a well-documented eustatic stillstand at about 130 m depth worldwide (Falkner et al., 2009). Where the ancient coastline provides areas of hard substrate, it may contribute to higher diversity and enhanced species richness relative to soft sediment habitat (Falkner et al., 2009). Parts of the ancient coastline, represented as rocky escarpment, are considered to provide biologically important habitat in an area predominantly made up of soft sediment. The escarpment type features may also potentially facilitate mixing within the water column due to upwelling, providing a nutrient-rich environment. Although the ancient coastline adds additional habitat types to a representative system, the habitat types are not unique to the coastline as they are widespread on the upper shelf (Falkner et al., 2009)
Canyons linking the Argo Abyssal Plain and Scott Plateau	-	✓	-	Facilitates nutrient upwelling, creating enhanced productivity and encouraging diverse aggregations of marine life Likely to be important due to their historical association with sperm whale aggregations	Interactions with the Leeuwin Current and strong internal tides are thought to result in upwelling at the canyon heads, thus creating conditions for enhanced productivity in the region (Brewer et al., 2007). As a result, aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, predatory fishes and seabirds are known to occur in the area due to its enhanced productivity (Sleeman et al., 2007)
Glomar Shoal	-	✓	-	An area of high productivity and aggregations of marine life including commercial and recreational fish species	Glomar Shoal is a submerged littoral feature located about 150 km north of Dampier on the Rowley shelf at depths of 33–77 m (Falkner et al., 2009). Studies by Abdul Wahab et al. (2018) found a number of hard coral and sponge species in water depths less than 40 m. One hundred and seventy (170) different species of fishes were detected with greatest species richness and abundance in shallow habitats (Abdul Wahab et al., 2018). Fish species present include a number of commercial and recreational species such as rankin cod, brown striped snapper, red emperor, crimson snapper, bream and yellow-spotted triggerfish (Falkner et al., 2009; Fletcher and Santoro, 2009). These species have recorded high catch rates associated with Glomar Shoal, indicating that the shoal is likely to be an area of high productivity

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	-	✓	-	Regionally important in supporting high species richness, higher productivity and aggregations of marine life	The Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals KEF is adjacent to the three nautical mile State waters limit surrounding Clerke Reef and Imperieuse Reef, and include the Mermaid Reef Marine Park as described in **Section 11**. The reefs provide a distinctive biophysical environment in the region. They have steep and distinct reef slopes and associated fish communities. In evolutionary terms, the reefs may play a role in supplying coral and fish larvae to reefs further south via the southward flowing Indonesian Throughflow. Both coral communities and fish assemblages differ from similar habitats in eastern Australia (*Done* et al*.,* 1994)
Exmouth Plateau	-	✓	✓	Unique seafloor feature with ecological properties of regional significance, which apply to both benthic and pelagic habitats Likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of approximately 1000 m	The Exmouth Plateau is a large, mid-slope, continental margin plateau that lies off the northwest coast of Australia. It ranges in depth from about 500 to more than 5000 m and is a major structural element of the Carnarvon Basin (Miyazaki and Stagg, 2013). The large size of the Exmouth Plateau and its expansive surface may modify deep water flow and be associated with the generation of internal tides; both of which may subsequently contribute to the upwelling of deeper, nutrient-rich waters closer to the surface (Brewer et al., 2007). Satellite observations suggest that productivity is enhanced along the northern and southern boundaries of the plateau (Brewer et al., 2007). Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna (DSEWPAC, 2012a). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton attracted to seasonal upwellings, as well as larger predators such as billfishes, sharks and dolphins (Brewer et al., 2007). Protected and migratory species are also known to pass through the region, including whale sharks and cetaceans
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	-	-	✓	Unique seafloor feature with ecological properties of regional significance The feature creates an enhanced productivity environment, attracting aggregations of fish and higher-order consumers such as large predatory	The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope, Exmouth Plateau and Ningaloo Reef. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads (DSEWPAC, 2012a). Aggregations of whale sharks, manta rays, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
				fish, sharks, toothed whales and dolphins	
Commonwealth waters adjacent to Ningaloo Reef	-	-	✓	High productivity and diverse aggregations of marine life The Commonwealth waters adjacent to Ningaloo Reef and associated canyons and plateaus are interconnected and support the high productivity and species richness of Ningaloo Reef. Ningaloo Reef is globally significant as it is the only extensive coral reef in the world that fringes the west coast of a continent	The Leeuwin and Ningaloo currents interact, leading to areas of enhanced productivity in the Commonwealth waters adjacent to Ningaloo Reef. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area (DSEWPAC, 2012a). The spatial boundary of this KEF, as defined in the Australian Marine Spatial Information System, is defined as the waters contained in the existing Ningaloo AMP provided in **Section 11**
Wallaby Saddle	-	-	✓	High productivity and aggregations of marine life: Representing almost the entire area of this type of geomorphic feature in the NWMR. It is a unique habitat that neither occurs anywhere else nearby (within hundreds of kilometres) nor with as large an area (Falkner et al. 2009)	The Wallaby Saddle may be an area of enhanced productivity. Historical whaling records provide evidence of sperm whale aggregations in the area of the Wallaby Saddle, possibly due to the enhanced productivity of the area and aggregations of baitfish (DSEWPAC, 2012a)

[1] Values description sourced from Marine bioregional plan for the North-west Marine Region (DSEWPAC, 2012a) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database.

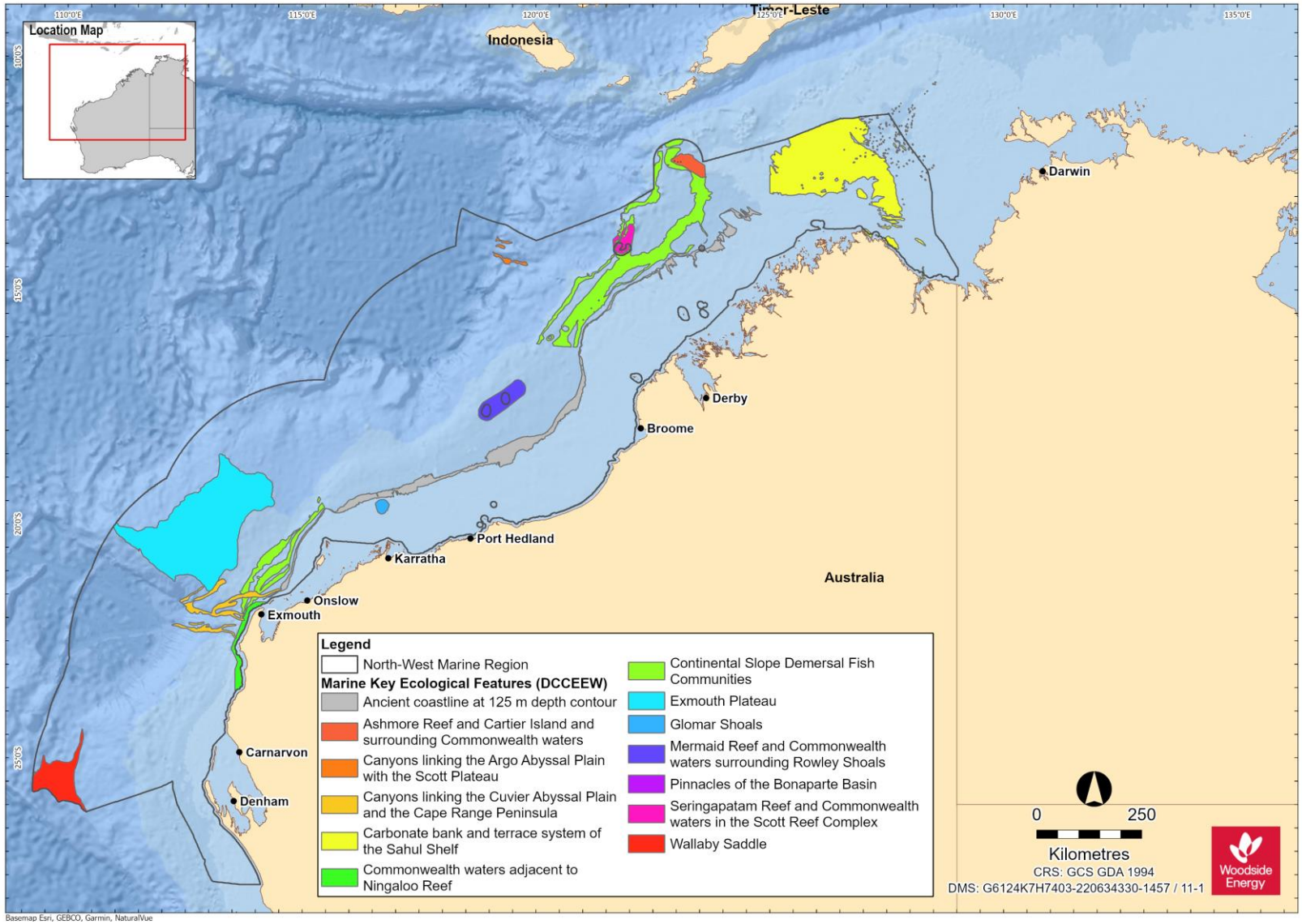


Figure 10-1 Key Ecological Features (KEFs) within the NWMR (data source: DCCEEW, 2024d)

Table 10-2 Key Ecological Features (KEF) within the SWMR

KEF Name	Values[1]	Description
Albany Canyons group and adjacent shelf break	High productivity and aggregations of marine life, and unique seafloor feature with ecological properties of regional significance Both benthic and demersal habitats within the feature are of conservation value	The Albany Canyons group is thought to be associated with small, periodic subsurface upwelling events, which may drive localised regions of high productivity. The canyons are known to be a feeding area for sperm whale and sites of orange roughy aggregations. Anecdotal evidence also indicates that this area supports fish aggregations that attract large predatory fish and sharks
Ancient coastline at 90-120 m depth	Relatively high productivity and aggregations of marine life, and high levels of biodiversity and endemism The feature creates topographic complexity, that may facilitate benthic biodiversity and enhanced biological productivity	Benthic biodiversity and productivity occur where the ancient coastline forms a prominent escarpment, such as in the western Great Australian Bight, where the sea floor is dominated by sponge communities of significant biodiversity and structural complexity
Cape Mentelle upwelling	Facilitates nutrient upwelling, supporting high productivity and diverse aggregations of marine life	The Cape Mentelle upwelling draws relatively nutrient-rich water from the base of the Leeuwin Current, up the continental slope and onto the inner continental shelf, where it results in phytoplankton blooms at the surface. The phytoplankton blooms provide the basis for an extended food chain characterised by feeding aggregations of small pelagic fish, larger predatory fish, seabirds, dolphins and sharks
Commonwealth marine environment surrounding the Houtman Abrolhos Islands (and adjacent shelf break)	High levels of biodiversity and endemism within benthic and pelagic habitats	The Houtman Abrolhos Islands and surrounding reefs support a unique mix of temperate and tropical species, resulting from the southward transport of species by the Leeuwin Current over thousands of years. The Houtman Abrolhos Islands are the largest seabird breeding station in the eastern Indian Ocean. They support more than one million pairs of breeding seabirds
Commonwealth marine environment surrounding the Recherche Archipelago	Aggregations of marine life and high levels of biodiversity and endemism within benthic and demersal communities	The Recherche Archipelago is the most extensive area of reef in the SWMR. Its reef and seagrass habitat supports a high species diversity of warm temperate species, including 263 known species of fish, 347 known species of molluscs, 300 known species of sponges, and 242 known species of macroalgae. The islands also provide haul-out (resting areas) and breeding sites for Australian sea lions and New Zealand fur seals

KEF Name	Values[1]	Description
Commonwealth marine environment within and adjacent to the west-coast inshore lagoons	High productivity and aggregations of marine life within benthic and pelagic habitats Important for benthic productivity and recruitment for a range of marine species	These lagoons are important for benthic productivity, including macroalgae and seagrass communities, and breeding and nursery aggregations for many temperate and tropical marine species. They are important areas for the recruitment of commercially and recreationally important fish species. Extensive schools of migratory fish visit the area annually, including herring, garfish, tailor and Australian salmon
Commonwealth marine environment within and adjacent to Geographe Bay	High productivity and aggregations of marine life, and high levels of biodiversity, recruitment within benthic and pelagic communities	Geographe Bay is known for its extensive beds of tropical and temperate seagrass that support a diversity of species, many of them not found anywhere else. The bay provides important nursery habitat for many species. Juvenile dusky whaler sharks use the shallow seagrass habitat as nursery grounds for several years, before ranging out to adult feeding grounds along the shelf break. The seagrass also provides valuable habitat for fish and invertebrates (Carruthers et al., 2007). It is also an important resting area for migratory humpback whales
Diamantina Fracture Zone	Unique seafloor feature with ecological properties of regional significance which apply to its benthic and demersal habitats	The Diamantina Fracture Zone is a rugged, deep-water environment of seamounts and numerous closely spaced troughs and ridges. Very little is known about the ecology of this remote, deep-water feature, but marine experts suggest that its size and physical complexity mean that it is likely to support deep-water communities characterised by high species diversity, with many species found nowhere else
Naturaliste Plateau	Unique seafloor feature with ecological properties of regional significance including high species diversity and endemism which apply to its benthic and demersal habitats	The Naturaliste Plateau is Australia's deepest temperate marginal plateau. The combination of its structural complexity, mixed water dynamics and relative isolation indicate that it supports deep-water communities with high species diversity and endemism
Perth Canyon and adjacent shelf break, and other west-coast canyons	An area of higher productivity that attracts feeding aggregations of deep-diving mammals and large predatory fish. It is also recognised as a unique seafloor feature with ecological properties of regional significance	The Perth Canyon is the largest known undersea canyon in Australian waters. Deep ocean currents rise to the surface, creating a nutrient-rich cold-water habitat attracting feeding aggregations of deep-diving mammals, such as pygmy blue whales and large predatory fish that feed on aggregations of small fish, krill and squid
Western demersal slope and associated fish communities of the Central Western Province	Provides important habitat for demersal fish communities and supports species groups that are nationally or regionally important to biodiversity	The western demersal slope provides important habitat for demersal fish communities, with a high level of diversity and endemism. A diverse assemblage of demersal fish species below a depth of 400 m is dominated by relatively small benthic species such as grenadiers, dogfish and cucumber fish. Unlike other slope fish communities in Australia, many of these species display unique physical adaptations to feed on the sea floor (such as a mouth position adapted to bottom feeding), and many do not appear to migrate vertically in their daily feeding habits
Western rock lobster	A species that plays a regionally important ecological role	This species is the dominant large benthic invertebrate in the region. The lobster plays an important trophic role in many of the inshore ecosystems of the SWMR. Western rock lobsters are an important part of the food web on the inner shelf, particularly as juveniles.

KEF Name	Values[1]	Description

[1.] *Values description sourced from Marine bioregional plan for the South-west Marine Region (DSEWPAC, 2012b) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database*

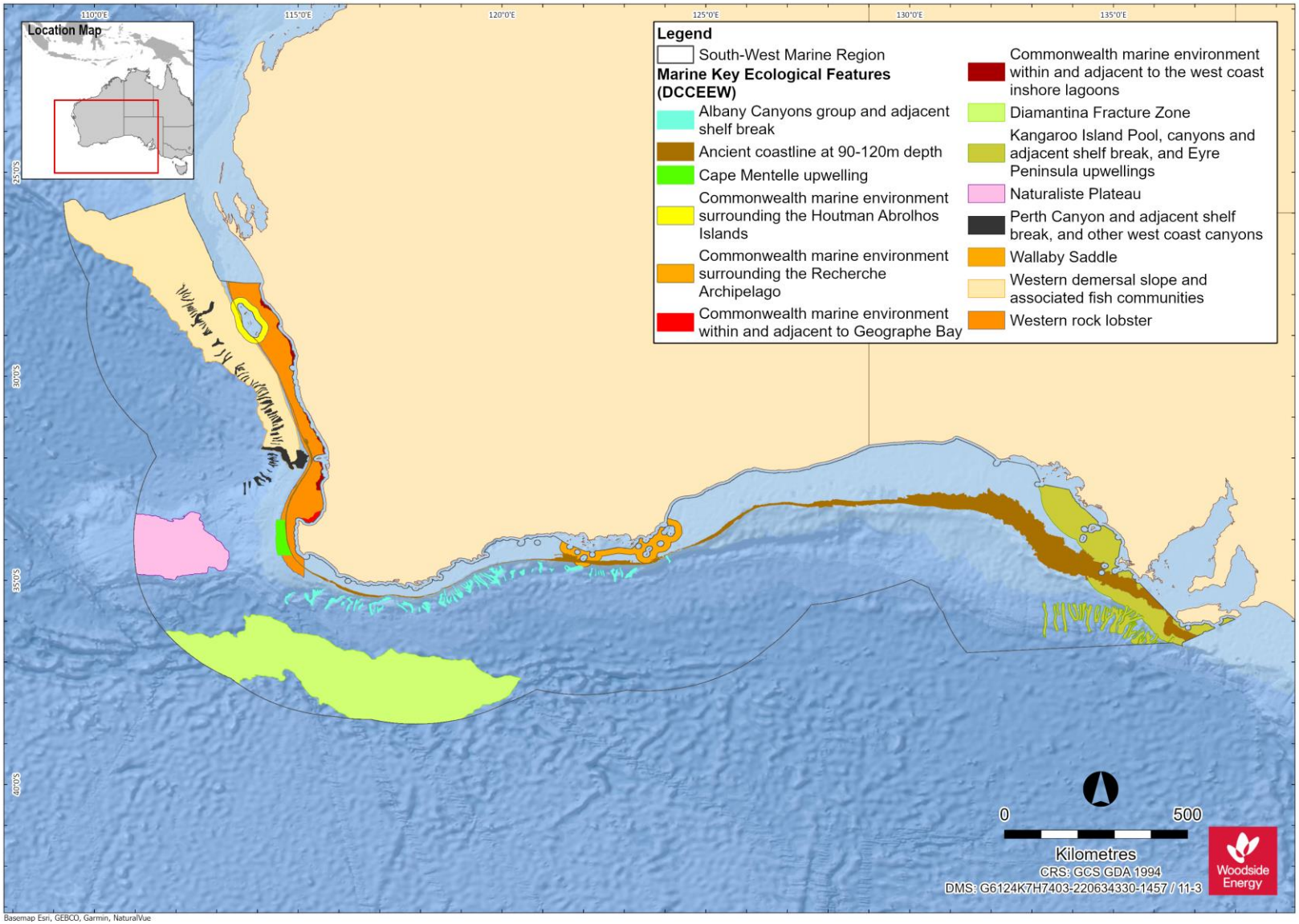


Figure 10-10-2. Key Ecological Features (KEFs) within the SWMR (data source: DCCEEW, 2024d)

Table 10-3 Key Ecological Features (KEF) within the NMR

KEF Name	Values[1]	Description
Carbonate bank and terrace system of the Van Diemen Rise	Important for its role in enhancing biodiversity and local productivity relative to its surrounds and for supporting relatively high species diversity The feature has been identified as a sponge biodiversity hotspot (Przeslawski et al. 2014)	The bank and terrace system of the Van Diemen Rise is part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east; it is characterised by terrace, banks, channels and valleys. The variability in water depth and substrate composition may contribute to the presence of unique ecosystems in the channels. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments of the deep channels; epifauna and infauna include polychaetes and ascidians. Olive ridley turtles, sea snakes and sharks are also found associated with this feature
Gulf of Carpentaria basin	Regional importance for biodiversity, endemism and aggregations of marine life relevant to benthic and pelagic habitats	The Gulf of Carpentaria basin is one of the few remaining near-pristine marine environments in the world. Primary productivity in the Gulf of Carpentaria basin is mainly driven by cyanobacteria that fix nitrogen but is also strongly influenced by seasonal processes. The soft sediments of the basin are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms. The basin also supports assemblages of pelagic fish species including planktivorous and schooling fish, with top predators such as shark, snapper, tuna, and mackerel
Gulf of Carpentaria coastal zone	High productivity, aggregations of marine life (including several endemic species) and high biodiversity compared to broader region	Nutrient inflow from rivers adjacent to the NMR generates higher productivity and more diverse and abundant biota within the Gulf of Carpentaria coastal zone than elsewhere in the region. The coastal zone is near pristine and supports many protected species such as marine turtles, dugongs, and sawfishes. Ecosystem processes and connectivity remain intact; river flows are mostly uninterrupted by artificial barriers and healthy, diverse estuarine and coastal ecosystems support many species that move between freshwater and saltwater environments
Pinnacles of the Bonaparte Basin	Unique seafloor feature with ecological properties of regional significance Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species Recognised as a biodiversity hotspot for sponges The Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 10-1**)	Covering more than 520 km^2 within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds and foraging turtles

KEF Name	Values[1]	Description
Plateaux and saddle north-west of the Wellesley Islands	High species abundance, diversity and endemism of marine life	Abundance and species density are high in the plateaux and saddle as a result of increased biological productivity associated with habitats rather than currents. Submerged reefs support corals that are typical of northern Australia, including corals that have bleach-resistant zooxanthellae; and particular reef fish species that are different to those found elsewhere in the Gulf of Carpentaria. Species present include marine turtles and reef fish such as coral trout, cod, mackerel, and shark. Seabirds frequent the plateaux and saddle, most likely due to the presence of predictable food resources for feeding offspring
Shelf break and slope of the Arafura Shelf	The shelf break and slope of the Arafura Shelf is defined as a key ecological feature for its ecological significance associated with productivity emanating from the slope It also forms part of a unique biogeographic province (Last et al., 2005)	The shelf break and slope of the Arafura Shelf is characterised by continental slope and patch reefs and hard substrate pinnacles. The ecosystem processes of the feature are largely unknown in the region; however, the Indonesian Throughflow and surface wind-driven circulation are likely to influence nutrients, pelagic dispersal and species and biological productivity in the region. Biota associated with the feature is largely of Timor–Indonesian Malay affinity
Submerged coral reefs of the Gulf of Carpentaria	High aggregations of marine life, biodiversity and endemism Twenty per cent of the reefs found in the NMR are situated within this KEF (Harris et al., 2007)	The submerged coral reefs of the Gulf of Carpentaria are characterised by submerged patch, platform and barrier reefs that form a broken margin around the perimeter of the Gulf of Carpentaria basin, rising from the sea floor at depths of 30–50 m. These reefs provide breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks. Coral trout species that inhabit the submerged reefs are smaller than those found in the Great Barrier Reef and may prove to be an endemic sub-species
Tributary Canyons of the Arafura Depression	High productivity and high levels of species diversity and endemism of marine life within the benthic and pelagic habitats of the feature	The tributary canyons are approximately 80–100 m deep and 20 km wide. The largest of the canyons extend some 400 km from Cape Wessel into the Arafura Depression, and are the remnants of a drowned river system that existed during the Pleistocene era. Sediments in this feature are mainly calcium-carbonate rich, although sediment type varies from sandy substrate to soft muddy sediments and hard, rocky substrate. Marine turtles, deep sea sponges, barnacles and stalked crinoids have all been identified in the area

[1] *Values description sourced from Marine bioregional plan for the North Marine Region (DSEWPAC, 2012c) and Department of Agriculture, Water and the Environment (DAWE) SPRAT database.*

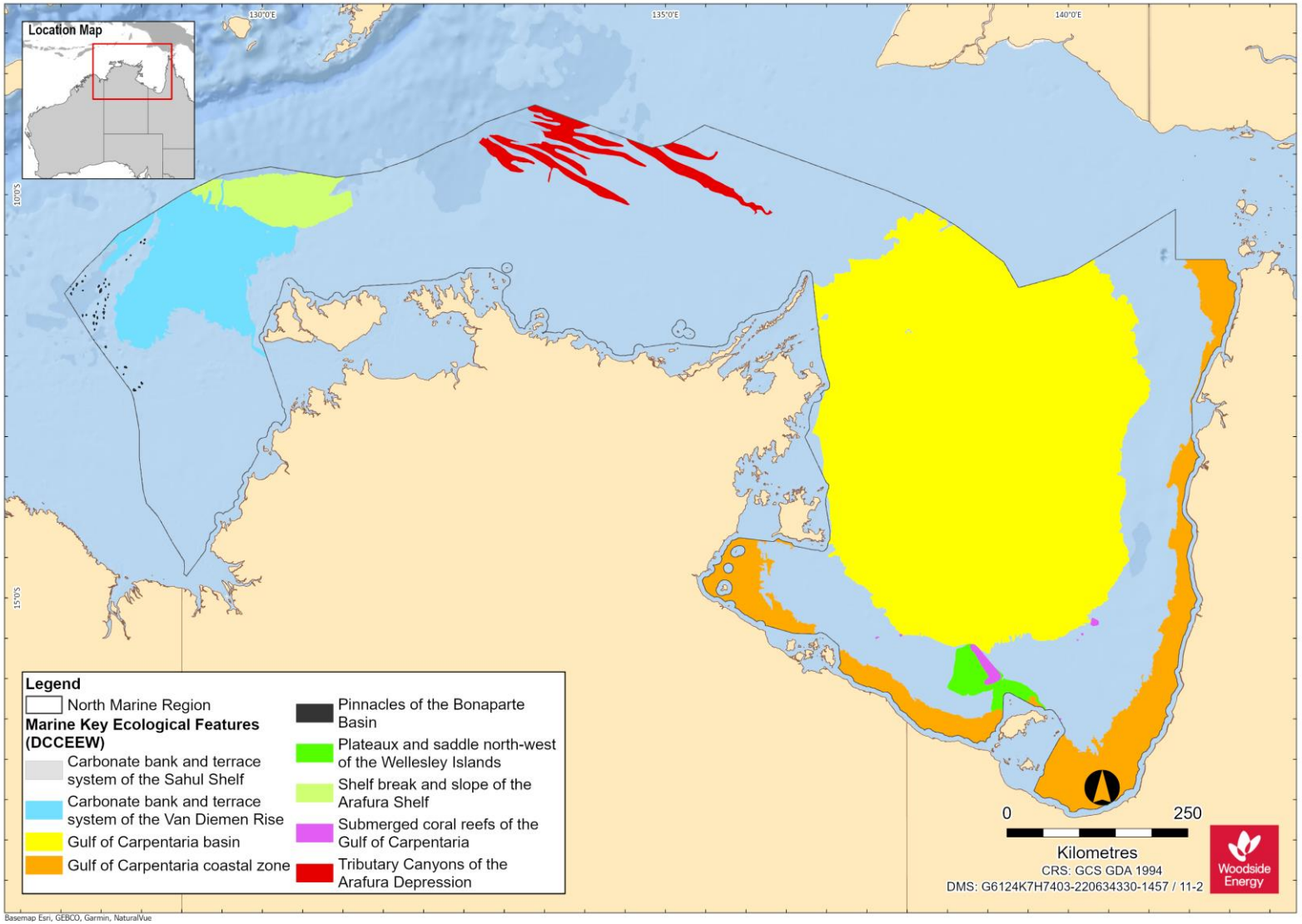


Figure -10-3. Key Ecological Features (KEFs) within the NMR (data source: DCCEEW, 2024d)

11. PROTECTED AREAS

11.1 Regional Context

Protected areas include World Heritage Properties, National Heritage Places, Wetlands of International Importance, Australian Marine Parks, State Marine Parks and Reserves, Threatened Ecological Communities and the Australian Whale Sanctuary. The PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show that there are 29 protected areas found in the NWMR, 18 in the SWMR and 9 in the NMR.

Australian Marine Parks are outlined in, **Table 11-1, Table 11-3** and **Table 11-4.** All other protected areas of each of the marine regions NWMR, SWMR and NMR are outlined in **Table 11-6, Table** 11-7 and **Table 11-8**, respectively.

11.2 World Heritage Properties

World Heritage listings are sites of outstanding universal value and meet at least 10 selection criteria, compiled of cultural and natural basis criteria. World Heritage listings classed as meeting outstanding natural criteria are discussed in this section and World Heritage sites classed as meeting outstanding cultural criteria are discussed in **Section 12**.

The list of Australia's World Heritage Properties and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show two World Heritage Properties within the NWMR (**Table 11-6**), one World Heritage Property within the SWMR (**Table 11-7**), and though not reported in the NMR PMST Report, Kakadu National Park World Heritage Area is included in **Table 11-8**.

11.3 National and Commonwealth Heritage Places–- Natural

The National Heritage List is Australia's list of natural, historic, and Indigenous places of outstanding significance to the nation. The National Heritage List Spatial Database describes the place name, class (Indigenous, natural, historic), and status. Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values which are owned or controlled by the Australian Government.

Only National and Commonwealth Heritage Places classed as natural are discussed in this section. Heritage Places classed as Indigenous or historic are discussed in **Section 12**.

A search of the National Heritage List Spatial Database and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified three natural National Heritage Places in the NWMR (**Table 11-6**), one in the SWMR (**Table 11-7**) and for the NMR, Kakadu National Park (not included in the PMST report) is included in **Table 11-8**.

A search of the Commonwealth Heritage List identified six natural commonwealth heritage places within the NWMR (**Table 11-6**) and one within the SWMR (**Table 11-7**).

11.4 Wetlands of International Importance (listed under the Ramsar Convention)

Australia has 65 Ramsar wetlands that cover >8.3 million ha. Ramsar wetlands are those that are representative, rare, or unique wetlands, or that are important for conserving biological diversity.

The List of Wetlands of International Importance held under the Ramsar Convention and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified four Ramsar Sites with coastal features within the NWMR (**Table 11-6**), five in the SWMR (**Table 11-7**) and two for the Northern Territory, included for the NMR (not included in the PMST report) (**Table 11-8**).

11.5 Australian Marine Parks

Australian Marine Parks (AMPs), proclaimed under the EPBC Act in 2007 and 2013, are located in Commonwealth waters from the outer edge of State and Territory waters (3 nm) to the outer boundary of Australia's EEZ 200 nm from the shore.

PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show 16 AMPs within the NWMR, 10 within the SWMR and eight within the NMR. These are displayed in **Figure 11-1**, Error! Reference source not found. and Error! Reference source not found. respectively.

The values of all marine parks identified in the North-West, South-West and North Marine Network management plans are described in **Table 11-1**, **Table 11-3** and **Table 11-4**, respectively.

There are also two AMPs in the Indian Ocean territories. These are the Cocos (Keeling) Islands Marine Park and the Christmas Island Marine Park (**Table 11-2, Figure 11-1**) (Commonwealth of Australia, 2021).

11.5.1 North West Marine Parks Network

Table 11-1 describes Australian Marine Parks within the North West Marine Park Network, according to the North West Marine Parks Network Management Plan 2018 (DNP, 2018a).

Table 11-1 Summary of Commonwealth Australian Marine Parks (AMPs) in the North West Marine Park Network

North West Marine Park Network	IUCN zones	Description and Values
Argo-Rowley Terrace Marine Park	National Park (II) Multiple use (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Argo–Rowley Terrace Marine Park is located approximately 270 km North-west of Broome, Western Australia, and extends to the limit of Australia's exclusive economic zone. This AMP covers an area of 146,003 km^2 and water depths between 220 m and 6000 m, protecting ecological communities in the deep offshore region. The AMP provides connectivity between the Mermaid Reef Marine Park and WA Rowley Shoals Marine Park.
		Natural values The Marine Park includes ecosystems representative of: • Northwest Transition—an area of shelf break, continental slope, and the majority of the Argo Abyssal Plain. Key topographic features include Mermaid, Clerke and Imperieuse Reefs; • Timor Province—an area dominated by warm, nutrient-poor waters. Canyons are an important feature in this area of the Marine Park and are generally associated with high productivity and aggregations of marine life. Key ecological features: • Canyons linking the Argo Abyssal Plain with the Scott Plateau; and • Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The Marine Park includes a range of seafloor features such as canyons on the slope between the Argo Abyssal Plain, Rowley Terrace and Scott Plateau. These are believed to be up to 50 million years old and are associated with small, periodic upwellings that results in localised higher levels of biological productivity. The Marine Park includes species listed under the EPBC Act. Biologically important areas within the Marine Park include resting and breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North West Marine Park Management Plan', limited information regarding the cultural significance of this marine park is currently available (DNP, 2018a).
		Heritage values There are no international, Commonwealth or national heritage listings relevant to the Argo-Rowley Terrace Marine Park. The Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976: Alfred* (wrecked in 1908) and *Pelsart* (wrecked in 1908).
		Social and economic values Socio-economic values of this Marine Park include commercial fishing and mining.

North West Marine Park Network	IUCN zones	Description and Values
Ashmore Reef Marine Park	Sanctuary (Ia) Recreational Use (IV)	**Description** The Ashmore Reef Marine Park is located approximately 630 km north of Broome and 110 km south of the Indonesian island of Roti. The Marine Park is located in Australia's External Territory of Ashmore and Cartier Islands. It is within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box. The Marine Park covers an area of 583 km² and water depths from less than 15 m to 500 m.
		Natural values The Ashmore Reef Marine Park includes ecosystems representative of the Timor Province—a bioregion with a depth range from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. Ashmore Reef is an important feature of the bioregion. There are two distinct demersal fish communities: one on the upper slope, the other mid slope. The marine environment includes two extensive lagoons, sand flats, shifting sand cays, extensive reef flat and large areas of seagrass. The reef ecosystems are comprised of hard and soft corals, gorgonians, sponges and a range of encrusting organisms, with the highest number of coral species of any reef off the Western Australian coast. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within the Marine Park include breeding, foraging and resting habitat for seabirds, resting and foraging habitat for migratory shorebirds, foraging, mating, nesting and internesting habitat for marine turtles, foraging habitat for dugong, and a migratory pathway for pygmy blue whales. The Ashmore Reef Ramsar site includes the largest of the atolls in the region. West Island, Middle Island and East Island represent the only vegetated islands in the region. The site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugong, and has the highest diversity of hermatypic (reef-building) corals on the West Australian coast. It is known for its abundance and diversity of sea snakes, although populations at Ashmore Reef have been in decline since 1998. Key ecological features: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and • Continental slope demersal fish communities—an area of high-diversity demersal fish assemblages.
		Cultural values Sea country is valued for Indigenous Australians cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North West Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a). This Marine Park is valued in Indonesian culture as it contains Indonesian artefacts and grave sites. Ashmore lagoon is still accessed as a rest or staging area for traditional Indonesian fishers travelling to and from fishing grounds within the MoU Box.
		Heritage values Ashmore Reef is a Commonwealth Heritage listed site, meeting criteria A, B and C.
		Social and economic values Tourism, recreation and scientific research are important activities in this Marine Park.
Carnarvon Canyon Marine Park	Habitat Protection (IV)	**Description** The Carnarvon Canyon Marine Park is located approximately 300 km North-west of Carnarvon. It covers an area of 6177 km² and a water depth range of 1,500–6,000 m.

North West Marine Park Network	IUCN zones	Description and Values
		Natural values This Marine Park includes ecosystems representative of the Central Western Transition—a bioregion characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities. It includes the Carnarvon Canyon, a single-channel canyon covering the entire depth range of this Marine Park. Ecosystems of this Marine Park are influenced by tropical and temperate currents, deep-water environments and proximity to the continental slope and shelf. The soft-bottom environment at the base of the Carnarvon Canyon is likely to support deep seafloor species (e.g. holothurians, polychaetes and sea-pens). This Marine Park supports a range of species listed under the EPBC Act.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park.
		Social and economic values Commercial fishing is an important activity in the Marine Park.
Cartier Island Marine Park	Sanctuary (Ia)	**Description** The Cartier Island Marine Park is located approximately 45 km south-east of Ashmore Reef Marine Park and 610 km north of Broome, Western Australia. Both Marine Parks are in Australia's External Territory of Ashmore and Cartier Islands and are also within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box. The Cartier Island Marine Park covers an area of 172 km² and water depths from less than 15 m to 500 m.
		Natural values This Marine Park includes ecosystems representative of the Timor Province—a bioregion with a depth range from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. The reefs and islands of this bioregion are regarded as biodiversity hotspots. Key ecological features: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and • Continental slope demersal fish communities. There are two distinct demersal fish communities of the continental slope: one on the upper slope, the other mid slope. This Marine Park includes an unvegetated sand island (Cartier Island), mature reef flat, a small, submerged pinnacle (Wave Governor Bank), and two shallow pools to the North-east of the island. It is also an area of high diversity and abundance of hard and soft corals, gorgonians (sea fans), sponges and a range of encrusting organisms. The reef crests are generally algal dominated, while the reef flats feature ridges of coral rubble and large areas of seagrass. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting, nesting and foraging habitat for marine turtles and foraging habitat for whale sharks. This Marine Park is internationally significant for its abundance and diversity of sea snakes.

North West Marine Park Network	IUCN zones	Description and Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North-west Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a).
		Heritage values This Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976:* the *Ann Millicent* (wrecked in 1888). No international or national heritage listings apply to this Marine Park.
		Social and economic values Scientific research is an important activity in this Marine Park.
Dampier Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Dampier Marine Park is located approximately 10 km North-east of Cape Lambert and 40 km from Dampier, extending from the Western Australian state water boundary. This Marine Park covers an area of 1252 km² and a water depth range between less than 15 m and 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting habitat for marine turtles and a migratory pathway for humpback whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Ngarluma, Yindjibarndi, Yaburara, and Mardudhunera people have responsibilities for sea country in this Marine Park. The native title holders for these people are represented by the Ngarluma Aboriginal Corporation and Yindjibarndi Aboriginal Corporation. These Prescribed Bodies Corporate represent traditional owners with native title over coastal areas adjacent to this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara and Yamatji regions.
		Heritage values No international, Commonwealth or national listings apply to this Marine Park, however the Marine Park is approximately 10 km north of the Dampier Archipelago (including Burrup Peninsula) national heritage listing, which has significant Indigenous heritage values including rock art sites.
		Social and economic values Port activities, commercial fishing and recreation, including fishing, are important activities in this Marine Park.

North West Marine Park Network	IUCN zones	Description and Values
Eighty Mile Beach Marine Park	Multiple Use (VI)	**Description** The Eighty Mile Beach Marine Park is located approximately 74 km North-east of Port Hedland, adjacent to the Western Australian Eighty Mile Beach Marine Park. This Marine Park covers an area of 10,785 km² and water depth ranges between less than 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding, foraging and resting habitat for seabirds, internesting and nesting habitat for marine turtles, foraging, nursing and pupping habitat for sawfish and a migratory pathway for humpback whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The sea country of the Nyangumarta, Karajarri and Ngarla people extends into the Eighty Mile Beach Marine Park. Sea country is culturally significant and important to their identity. They have an unbroken, deep spiritual connection to their sea country, with traditional practices continuing today. Staple foods of living cultural value for the Nyangumarta, Karajarri and Ngarla people include saltwater fish, turtles, dugong, crabs and oysters. Access to sea country by families is important for cultural traditions, livelihoods and future socio-economic development opportunities. The native title holders for the Nyangumarta, Karajarri and Ngarla people are represented by the Karajarri Aboriginal Corporation, Nyangumarta Karajarri Aboriginal Corporation, Nyangumarta Warrarn Aboriginal Corporation, and Wanparta Aboriginal Corporation. These Prescribed Body Corporates represent traditional owners with native title over coastal area adjacent to the Marine Park. They are the points of contact for their respective areas of responsibility for sea country in the Marine Park. The Kimberley Land Council and the Yamatji Marlpa Aboriginal Corporation are the Native Title Representative Bodies for Kimberley and Pilbara regions.
		Heritage values This Marine Park contains three known shipwrecks listed under the *Historic Shipwrecks Act 1976: Lorna Doone* (wrecked in 1923), *Nellie* (wrecked in 1908), and *Tifera* (wrecked in 1923). No international, Commonwealth or national listings apply to the Marine Park.
		Social and economic values Tourism, commercial fishing, pearling and recreation are important activities in this Marine Park.
Gascoyne Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Gascoyne Marine Park is located approximately 20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Reef Marine Park and the Western Australian Ningaloo Marine Park and extends to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 81,766 km² and water depth varies between 15 m and 6,000 m.

North West Marine Park Network	IUCN zones	Description and Values
		Natural values This Marine Park includes ecosystems representative of: • Central Western Shelf Transition—continental shelf with water depths up to 100 m, and a significant transition zone between tropical and temperate species; • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, benthic slope communities comprising tropical and temperate species; and • Northwest Province—an area of continental slope comprising diverse and endemic fish communities. Key ecological features: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; • Commonwealth waters adjacent to Ningaloo Reef; • Continental slope demersal fish communities; and • Exmouth Plateau. Ecosystems represented in this Marine Park are influenced by the interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat and migratory pathway for pygmy blue whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli people have responsibilities for sea country in this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values *World heritage* The Ningaloo Coast was listed as an area of outstanding universal value under the World Heritage Convention in 2011, meeting world heritage listing criteria vii and x. The Ningaloo Coast World Heritage Property is adjacent to the Marine Park. *Commonwealth heritage* The Ningaloo Marine Area (Commonwealth waters) meets the Commonwealth heritage listing criteria A, B and C. The Ningaloo Marine Area is adjacent to the Marine Park. *National heritage* The Ningaloo Coast meets the national heritage listing criteria A, B, C, D, and F and is adjacent to the Marine Park. *Historic shipwrecks* The Marine Park contains more than five known shipwrecks listed under the *Historic Shipwrecks Act 1976*.
		Social and economic values Commercial fishing, mining and recreation are important activities in this Marine Park.
Kimberley Marine Park	Habitat Protection (IV) National Park (II)	**Description** The Kimberley Marine Park is located approximately 100 km north of Broome, extending from the Western Australian state water boundary north from the Lacepede Islands to the Holothuria Banks offshore from Cape Bougainville. This Marine Park is

North West Marine Park Network	IUCN zones	Description and Values
	Multiple Use (VI)	adjacent to the Western Australian Lalanggarram/Camden Sound Marine Park and the North Kimberley Marine Park. This Marine Park covers an area of 74,469 km² and water depths from less than 15 m to 800 m.
		Natural Values This Marine Park includes ecosystems representative of: • Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and an ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. • Northwest Shelf Transition—straddles the North-west and North Marine Regions and in the Northwest includes shelf break, continental slope, and the majority of the Argo Abyssal Plain and is subject to a high incidence of cyclones. Benthic biological communities in the deeper parts of the bioregion have not been extensively studied, although high levels of species diversity and endemism occur among demersal fish communities on the continental slope. • Timor Province—water depths (of the bioregion) ranging from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. The reefs and islands of the bioregion are regarded as biodiversity hotspots. Endemism in demersal fish communities of the continental slope is high; two distinct communities have been identified on the upper and mid slopes. Key ecological features: • The ancient coastline at the 125 m depth contour; and • The continental slope demersal fish communities. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting and nesting habitat for marine turtles, breeding, calving and foraging habitat for inshore dolphins, calving, migratory pathway and nursing habitat for humpback whales, migratory pathway for pygmy blue whales, foraging habitat for dugong and foraging habitat for whale sharks.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Wunambal Gaambera, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people's sea country extends into the Kimberley Marine Park. The Wunambal Gaambera people's country includes daagu (deep waters), with about 3,400 km² of their sea country located in this Marine Park. The Wunambal Gaambera, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people have an unbroken connection to their sea country, having deep spiritual connection through Wunggurr (creator snakes) that still live in the sea. Staple foods of living cultural value include saltwater fish, turtles, dugong, crabs and oysters. Access to sea country by families is important for cultural traditions, livelihoods and future socio-economic development opportunities. The national heritage listing for the West Kimberley recognises the following key cultural heritage values: • Wanjina Wunggurr Cultural Tradition which incorporates many sea country cultural sites; • Log-raft maritime tradition, which involved using tides and currents to access warrurru (reefs) far offshore to fish; • Interactions with Makassan traders around sea foods over hundreds of years; and • Important pearl resources that were used in traditional trade through the wunan and in contemporary commercial agreements.

North West Marine Park Network	IUCN zones	Description and Values
		The Wunambal Gaambera, Dambimangari and Bardi Jawi people consider that these values extend into the Kimberley Marine Park. The Wanjina Wunggurr is law of the Wunambal Gaambera and Dambimangari people and it is recognised that all of the sea country, land, plants and animals were put there by Wanjina Wunggurr. Under Wanjina Wunggurr law, the Wunambal Gaambera and Dambimangari people have a responsibility to manage country, to maintain the health of the country and all living things. The Wunambal Gaambera, Bardi Jawi, Mayala and the Nyul Nyul people have had native title determined over parts of their sea country included in this Marine Park. The native title holders for these people are represented by the Wunambal Gaambera Aboriginal Corporation, Bardi and Jawi Niimidiman Aboriginal Corporation and the Kimberley Land Council. These representative bodies are the points of contact for their respective areas of sea country for this Marine Park. The Kimberley Land Council is the Native Title Representative Body for the Kimberley region.
		Heritage values This Marine Park contains more than 40 known shipwrecks listed under the *Historic Shipwrecks Act 1976.* No international, Commonwealth or national heritage listings apply to the Marine Park, however the Marine Park is adjacent to the national heritage place of the West Kimberley.
		Social and economic values Tourism, commercial fishing, mining, recreation, including fishing and traditional use, are important activities in this Marine Park.
Mermaid Reef Marine Park	National Park (II)	**Description** The Mermaid Reef Marine Park is located approximately 280 km North-west of Broome, adjacent to the Argo–Rowley Terrace Marine Park and approximately 13 km from the Western Australian Rowley Shoals Marine Park. This Marine Park covers an area of 540 km² and water depths from less than 15 m to 500 m. Mermaid Reef is one of three reefs forming the Rowley Shoals. The reefs of the Rowley Shoals are significant as they are considered ecological stepping stones for reef species originating in Indonesian/Western Pacific waters, are one of a few offshore reef systems on the North-west Shelf, and may also provide an upstream source for recruitment to reefs further south.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Transition—an area of shelf break, continental slope, and the majority of the Argo Abyssal Plain. Together with Clerke Reef and Imperieuse Reef, Mermaid Reef is a biodiversity hotspot and key topographic feature of the Argo Abyssal Plain. A key ecological feature of this Marine Park is the Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals. Ecosystems of this Marine Park are associated with emergent reef flat, deep reef flat, lagoon, and submerged sand habitats. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North-west Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a).
		Heritage values No international or national listings apply to this Marine Park. Mermaid Reef–Rowley Shoals was established on the Commonwealth Heritage List in 2004, meeting Commonwealth heritage listing criteria A, B, C and D.

North West Marine Park Network	IUCN zones	Description and Values
		This Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976*: *Lively* (wrecked in 1810).
		Social and economic values Tourism, recreation, and scientific research are important activities in this Marine Park.
Montebello Marine Park	Multiple Use (VI)	**Description** The Montebello Marine Park is located offshore of Barrow Island and 80 km west of Dampier extending from the Western Australian State water boundary, and is adjacent to the Western Australian Barrow Island and Montebello Islands Marine Parks. This Marine Park covers an area of 3413 km² and water depths from less than 15 m to 150 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities. A key ecological feature of this Marine Park is the ancient coastline at the 125 m depth contour. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds, internesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks.
		Cultural values The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara region. Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North-west Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a).
		Heritage values No international, Commonwealth or national listings apply to this Marine Park, however this Marine Park is adjacent to the Western Australia Barrow Island and the Montebello– Barrow Island Marine Conservation Reserves which have been nominated for national heritage listing. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976: Trial* (wrecked in 1622), the earliest known shipwreck in Australian waters and *Tanami* (unknown date).
		Social and economic values Tourism, commercial fishing, mining and recreation are important activities in this Marine Park.
Ningaloo Marine Park	National Park (II) Recreational Use (IV)	**Description** The Ningaloo Marine Park stretches approximately 300 km along the west coast of the Cape Range Peninsula, and is adjacent to the Western Australian Ningaloo Marine Park and Gascoyne Marine Park. This Marine Park covers an area of 2,435 km² and a water depth range of 30 m to more than 500 m. This Marine Park provides connectivity between deeper offshore waters of the shelf break and coastal waters of the adjacent Western Australian Ningaloo Marine Park. It includes some of the most diverse continental slope habitats in Australia, including the continental slope area between North-west Cape and the Montebello Trough. Canyons in this Marine Park are important for sustaining the nutrient conditions that support the high diversity of Ningaloo Reef.
		Natural values This Marine Park includes examples of ecosystems representative of:

North West Marine Park Network	IUCN zones	Description and Values
		• Central Western Shelf Transition—continental shelf of water depths up to 100 m, and a significant transition zone between tropical and temperate species; • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species; • Northwest Province—an area of continental slope comprising diverse and endemic fish communities; and • Northwest Shelf Province—a dynamic environment, influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. Key ecological features: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; • Commonwealth waters adjacent to Ningaloo Reef; and • Continental slope demersal fish communities. Ecosystems represented in this Marine Park are influenced by interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and / or foraging habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, foraging habitat and migratory pathway for pygmy blue whales, breeding, calving, foraging and nursing habitat for dugong and foraging habitat for whale sharks.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli people have responsibilities for sea country in this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region**.**
		Heritage values *World heritage* This Marine Park is within the Ningaloo Coast World Heritage Property, meeting world heritage listing criteria vii and x. The area is valued for high terrestrial species endemism, marine species diversity and abundance, and the interconnectedness of large-scale marine, coastal and terrestrial environments. The area connects the limestone karst system and fossil reefs of the ancient Cape Range to the nearshore reef system of Ningaloo Reef, to the continental slope and shelf in Commonwealth waters. *National heritage* The Ningaloo Coast overlaps this Marine Park, meeting the national heritage listing criteria A, B, C, D, and F. *Commonwealth heritage* The Ningaloo Marine Area (Commonwealth waters) meets Commonwealth heritage listing criteria A, B and C. The Ningaloo Marine Area overlaps this Marine Park. *Historic shipwrecks* This Marine Park contains more than 15 known shipwrecks listed under the *Historic Shipwrecks Act 1976*.
		Social and economic values Tourism and recreation, including fishing, are important activities in this Marine Park.

North West Marine Park Network	IUCN zones	Description and Values
Roebuck Marine Park	Multiple Use (VI)	**Description** The Roebuck Marine Park is located approximately 12 km offshore of Broome and is adjacent to the Western Australian Yawuru Nagulagun/Roebuck Bay Marine Park. This Marine Park covers an area of 304 km² and a water depth range of less than 15 m to 70 m. This Marine Park is adjacent to the Roebuck Bay Ramsar site, recognised as one of the most important areas for migratory shorebirds in Australia; and the Western Australian Yawuru Nagulagun/Roebuck Bay Marine Park, providing connectivity between offshore and inshore coastal waters of Roebuck Bay.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and resting habitat for seabirds, foraging and internesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for dugong.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. Yawuru people have always recognised the waters of Roebuck Bay as nagula (Yawuru sea country), and have customary responsibilities to care for it. They have a deep spiritual connection to offshore landscapes from Bugarrigarra (creator beings), and believe that snake-like metaphysical beings inhabit the sea. Cultural sites in sea country are also a source of law. The Yawuru people harvest marine resources according to the six Yawuru seasons. They have harvested pearl shell for food and cultural purposes. Fish are a staple food source, and fishing a form of cultural expression, connecting people to their country, modelled on tradition and based in traditional law. Access to sea country by families is important to cultural traditions, livelihoods and future socio-economic development opportunities. The Yawuru Native Title Holders Aboriginal Corporation is the Prescribed Body Corporate representing traditional owners with native title over coastal areas adjacent to this Marine Park, and is the point of contact for sea country in this Marine Park. The Kimberley Land Council is the Native Title Representative Body for the Kimberley region.
		Heritage values No international, Commonwealth or national listings apply to the Marine Park, however it is adjacent to the West Kimberley National Heritage Place.
		Social and economic values Tourism, commercial fishing, pearling and recreation, including fishing, are important activities that occur in the Marine Park.
	Multiple Use (VI)	**Description**

North West Marine Park Network	IUCN zones	Description and Values
Shark Bay Marine Park		The Shark Bay Marine Park is located approximately 60 km offshore of Carnarvon, adjacent to the Shark Bay world heritage property and national heritage place. This Marine Park covers an area of 7443 km², extending from the Western Australian State water boundary, and a water depth range between 15 m and 220 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Central Western Shelf—a predominantly flat, sandy and low-nutrient area, in water depths 50 – 100 m. The bioregion is a transitional zone between tropical and temperate species; and • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species. Ecosystems represented in this Marine Park are influenced by the Leeuwin, Ningaloo and Capes currents. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds, internesting habitat for marine turtles, and a migratory pathway for humpback whales. This Marine Park and adjacent coastal areas are also important for shallow-water snapper.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli and Malgana people have responsibilities for sea country in this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park , but this Marine Park is adjacent to the Shark Bay, Western Australia World Heritage Property and Shark Bay, Western Australia National Heritage Place. The Marine Park contains approximately 20 known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in the Marine Park.

11.5.2 Indian Ocean Territory

Error! Reference source not found. describes the values of the Indian Ocean territory Australian Marine Parks (Commonwealth of Australia, 2021)

Table 11-2 Summary of Commonwealth marine parks within Indian Ocean territories

Indian Ocean territory Marine Park	IUCN Zones	Values
Christmas Island Marine Park	National Park (II) Habitat Protection (IV)	**Description** Christmas Island Marine Park covers an area of 277,016 km^2 and extends from the island's shoreline to the limit of Australia's exclusive economic zone, approximately 200 nm from shore (except to the north of Christmas Island). This marine park adjoins the marine boundary of Christmas Island National Park (CINP), which extends 50 m seaward from the island. Almost all the island's port is excluded from this marine park, except for a very small and narrow part of the port's western boundary.
		Natural values The tropical waters and fringing coral reefs that surround Christmas Island contain a mix of coral reef species from both the Indian and Pacific Oceans and over 680 species of fish have been recorded in the region. The overlap of these waters gives rise to varieties of hybrid marine fish and some endemic species. Christmas Island also has the world's greatest diversity and abundance of land crabs. The island's waters are essential for the crabs, as they migrate to the coast to breed and release their eggs into the ocean. This Marine Park contains a range of unique seafloor features, habitats and species, particularly seamounts and deep-sea plains. Biologically important areas include foraging areas for the endemic Abbott's booby, Christmas Island frigatebird and golden bosun and other seabirds that nest on Christmas Island, as well as whale shark feeding areas and southern bluefin tuna breeding habitat.
		Cultural values The ocean is a centrepiece of life for many community members, of Christmas Island including those of Malay and Chinese heritage who maintain strong cultural traditions and connections to the surrounding marine environment.
		Social and economic values This Marine Park is valued for fishing (commercial, recreational and subsistence), diving, snorkelling and tourism. There is potential for scientific study and educational activities.
Cocos (Keeling) Islands Marine Park	National Park (II) Habitat Protection (IV)	**Description** Cocos (Keeling) Islands are located around 2,750 km North-west of Perth and the Cocos (Keeling) Islands Marine Park covers a 467,054 km^2 area, extending from most of the islands' shoreline to the limit of the Australian exclusive economic zone, approximately 100 nm from shore. The Cocos (Keeling) islands are a group of 27 tropical low-lying coral islands.
		Natural values The central lagoon system and outer reefs are two of the islands' important habitats. The lagoon encompasses a variety of unique and distinct habitats. This includes seagrass, which is essential for the resident green turtle population (which is a genetically distinct stock that is unique to the islands) as well as for sustaining fish populations. The outer reef habitats are dominated by hard and soft corals and have a high abundance and diversity of reef fish and other species. The offshore waters contain a range of unique seafloor features, habitats, and species, particularly seamounts, deep-sea plains, and a significant deep-sea ridgeline. This Marine Park also protects the foraging habitat of nesting seabirds on North Keeling Island (Pulu Keeling National Park), as well as species such as dolphins, deep-sea fish and sharks that are or may be threatened elsewhere in the region.

Indian Ocean territory Marine Park	IUCN Zones	Values
		Cultural values Most of the islands' community members are Cocos Malay, who maintain vibrant and unique cultural traditions including strong cultural connections to the surrounding marine environment. The lagoon and ocean are an important part of life for all community members living on the remote atoll.
		Social and economic values This Marine Park is valued for recreational and subsistence activities (i.e., fishing, boating, diving, snorkelling, kite surfing, and kayaking), tourism, scientific research, and educational activities.

11.5.3 South-west Marine Parks Network

Table 11-3 describes the Australian Marine Parks within the South-west Marine Parks Network (South-west Network), according to the South West Marine Parks Network Management Plan 2018 (DNP, 2018b)

Table 11-3 Summary of Commonwealth Australia Marine Parks (AMP)s for the South West Marine Park Network

South West Marine Park Network	IUCN zones	Natural Values
Abrolhos Marine Park	National Park (II) Habitat Protection (IV) Multiple use (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Abrolhos Marine Park is located adjacent to the Western Australian Houtman Abrolhos Islands, covering a large offshore area extending from the Western Australian State water boundary to the edge of Australia's exclusive economic zone. It is located approximately 27 km south-west of Geraldton and extends north to approximately 330 km west of Carnarvon. The northernmost part of the shelf component of the Marine Park, north of Kalbarri, is adjacent to the Shark Bay World Heritage Area. This Marine Park covers an area of 88,060 km² and a water depth range between less than 15 m and 6,000 m.
		Natural values This Marine Park includes ecosystems representative of: • Central Western Province—characterised by a narrow continental slope incised by many submarine canyons and the most extensive area of continental rise in any of Australia's marine regions. A significant feature within the area are several eddies that form off the Leeuwin Current at predictable locations, including west of the Houtman Abrolhos Islands; • Central Western Shelf Province— a predominantly flat, sandy and low nutrient area, in water depths between 50 and 100 m. Significant seafloor features of this area include a deep hole and associated area of banks and shoals offshore of Kalbarri. The area is a transitional zone between tropical and temperate species; • Central Western Transition—a deep ocean area characterised by large areas of continental slope, a range of significant seafloor features including the Wallaby Saddle, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species; and • South-west Shelf Transition—a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including a large number of endemic fauna species. Key ecological features: • Commonwealth marine environment surrounding the Houtman Abrolhos Islands; • Demersal slope and associated fish communities of the Central Western Province; • Mesoscale eddies; • Perth Canyon and adjacent shelf break, and other west-coast canyons; • Western rock lobster; • Ancient coastline between 90 m and 120 m depth; and • Wallaby Saddle.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging and breeding habitat for seabirds, foraging habitat for Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales. The Marine Park is adjacent to the northernmost Australian sea lion breeding colony in Australia on the Houtman Abrolhos Islands.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Nanda and Naaguja People have responsibilities for sea country in this Marine Park. Traditional owners have strong stories that connect ocean and land. Artefacts from ancestors are abundant on islands in the adjacent State marine park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values No international heritage listings apply to this Marine Park, however this Marine Park is adjacent to the Western Australian Shark Bay World Heritage Property, listed as an area of outstanding universal value under the World Heritage Convention in 1991, meeting world heritage listing criteria vii, viii, ix, and x. No Commonwealth or national heritage listings apply to this Marine Park ; however this Marine Park is adjacent to the Western Australian Shark Bay National Heritage Place. This Marine Park contains 11 known shipwrecks listed under the *Historic Shipwrecks Act 1976*. The *Zuytdorp* (wrecked in 1712) historic shipwreck protected zone lies in State waters adjacent to the northernmost part of the shelf component of the Marine Park, north of Kalbarri. The *HMAS Sydney II* and *HSK Kormoran* Shipwreck Sites (1941) lie at 2,500 m depth about 75 km east of the northern part of the Marine Park. This site is on the National Heritage List and a historic shipwreck protected zone. The *Batavia* (wrecked on the adjacent Abrolhos Islands in 1629) Shipwreck Site and Survivor Camps Area are on the National Heritage List.
		Social and economic values Tourism, commercial fishing, mining, recreation including fishing, are important activities in the Marine Park.
Bremer Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Bremer Marine Park is located approximately half-way between Albany and Esperance, offshore from the Fitzgerald River National Park, extending from the Western Australian State water boundary. This Marine Park covers an area of 4,472 km² and water depths from 15 m to 5,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope incised by numerous, well-developed submarine canyons; and • South-west Shelf Province—marine life in this area is very diverse and likely influenced by the warm waters of the Leeuwin Current. The sheltered bays along the south coast are important southern right whale calving areas. Key ecological features: • Albany Canyon group and adjacent shelf break; and • Ancient coastline between 90 m and 120 m depth.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, and white sharks, a migratory pathway for humpback whales, and a significant calving area for southern right whales. This Marine Park includes canyons—important aggregation areas for killer whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Noongar people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation, including fishing, are important activities in this Marine Park.
Eastern Recherche Marine Park	National Park Zone (II) Special Purpose Zone (VI)	**Description** The Eastern Recherche Marine Park is located approximately 135 km east of Esperance, adjacent to the Recherche Archipelago, close to the Western Australian Cape Arid National Park. This Marine Park covers an area of 20,575 km², extending from the Western Australia State water boundary to the edge of Australia's exclusive economic zone, and a water depth range from less than 15 m to 6,000 m.
		Natural values This Marine Park includes ecosystems representative of: • South-west Shelf Province—marine life in this area is very diverse and likely influenced by the warm waters of the Leeuwin Current. It includes globally important biodiversity hotspots, such as the waters surrounding the Recherche Archipelago; • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope, numerous, well-developed submarine canyons, and extensive mid-slope terraces; and • Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for threatened southern right whale and the Australian sea lion. Key ecological features: • Mesoscale eddies; • Ancient coastline between 90 m and 120 m depth; and • Commonwealth marine environment surrounding the Recherche Archipelago.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Ngadju and Esperance Nyungar people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976—Rodondo* (wrecked in 1894) and *Start* (wrecked in 1879).
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in this Marine Park.
Geographe Marine Park	National Park Zone (II) Habitat Protection (IV) Multiple Use (VI) Special Purpose (Mining Exclusion Zone) (VI)	**Description** The Geographe Marine Park is located in Geographe Bay, approximately 8 km west of Bunbury and 8 km north of Busselton, adjacent to the Western Australian Ngari Capes Marine Park. This Marine Park covers an area of 977 km^2, extending from the Western Australian State water boundary, and a water depth range between 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the South-west Shelf Province—an area of diverse marine life, influenced by the warm waters of the Leeuwin Current. The bioregion includes globally important biodiversity hotspots, such as the waters off Geographe Bay. Key ecological features: • Commonwealth marine environment within and adjacent to Geographe Bay; and • Western rock lobster. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Noongar people have responsibility for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations.

South West Marine Park Network	IUCN zones	Natural Values
		The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains eight known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing and recreation, including fishing, are important activities in the Marine Park.
Great Australian Bight Marine Park	National Park Zone (II), Multiple Use Zone (VI) Special Purpose Zone (Mining Exclusion) (VI) Special Purpose Zone (VI)	**Description** The Great Australian Bight Marine Park is located approximately 12 km south-east of Eucla and 174 km west of Ceduna, adjacent to the South Australian Far West Coast and Nuyts Archipelago Marine Parks. This Marine Park covers an area of 45,822 km², extending from South Australian State water boundary to the edge of Australia's exclusive economic zone, and a water depth range between less than 15 m and 6,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Great Australian Bight Shelf Transition—a vast and shallow area, characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion; • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and that is characterised by a long continental slope, numerous, well-developed submarine canyons, and extensive mid-slope terraces such as the Ceduna Terrace. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving area, migratory pathway and large aggregation area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Mirning and Wirangu people have responsibilities for sea county in this Marine Park. The far west coast region of South Australia includes over 1,000 km of coastline along the Nullarbor Cliffs of the Great Australian Bight and the Nyuts Archipelago, and supports a sea-based tradition and culture. The Mirning people have a strong connection to land and sea country of the Nullarbor, and the Wirangu people have a strong connection to land and sea country across the remainder of the far west coastal region. Fishing is woven into the beliefs and values of this region, through the use of resources such as shell fish, periwinkles, abalone and razorfish; and the sharing of traditional fishing knowledge, catch and meals. The care and protection of these waters, the coastline, marine life and resources correspond directly with cultural stories, sites and knowledge. South Australian Native Title Services is the native title service provider for the South Australian region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, and mining are important activities in this Marine Park.
Jurien Marine Park	National Park Zone (II) Special Purpose (VI)	**Description** The Jurien Marine Park is located approximately 148 km north of Perth and 155 km south of Geraldton, adjacent to the Western Australian Jurien Bay Marine Park. This Marine Park covers an area of 1,851 km² of continental shelf, extending from the Western Australian State water boundary, and a water depth range between 15 m and 220 m.
		Natural values This Marine Park includes ecosystems representative of: • South-west Shelf Transition—consists of a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the bioregion's western edge. The area contains a diversity of tropical and temperate marine life including a large number of endemic fauna species; and • Central Western Province—this Marine Park includes a small component of this bioregion, characterised by a narrow continental slope and influenced by the Leeuwin Current. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Demersal slope and associated fish communities of the Central Western Province; and • Western rock lobster. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Noongar people have responsibilities for sea country in this Marine Park. Traditional owners have strong stories that connect ocean and land. Artefacts from ancestors are abundant on islands in the adjacent State marine park. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976— SS Cambewarra* (wrecked in 1914) and *Oleander* (wrecked in 1884).
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in this Marine Park.
Murat Marine Park	National Park Zone (II)	**Description**

South West Marine Park Network	IUCN zones	Natural Values
		The Murat Marine Park is located 86 km off the west coast south-west of Ceduna, south of the South Australian Nuyts Archipelago Marine Park. This Marine Park covers an area of 938 km² and is relatively shallow, with water depths between less than 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion. Key ecological features: • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds and Australian sea lions.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Mirning people have a strong attachment to land and sea country of the Nullarbor, while the Wirangu people have a strong attachment to land and sea country across the remainder of the far west coast region. The care and protection of the waters, coastline, marine creatures, marine environments and sea resources correspond directly with cultural stories and important cultural sites and knowledge. South Australian Native Title Services is the native title service provider for the South Australian region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values The remoteness of this Marine Park makes access difficult with most recreational and tourism activities confined to State waters. Commercial ships may pass through this Marine Park to and from the port of Ceduna.
Perth Canyon Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Perth Canyon Marine Park is located approximately 52 km west of Perth and approximately 19 km west of Rottnest Island. This Marine Park covers an area of 7,409 km² and water depths range between 120 m and 5,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Central Western Province—characterised by a narrow continental slope incised by many submarine canyons, including Perth Canyon, and the most extensive area of continental rise in any of Australia's marine regions. A significant feature within the area are several eddies that form off the Leeuwin Current at predictable locations, including the Perth Canyon; • South-west Shelf Province—marine life in this area is diverse and influenced by the warm waters of the Leeuwin Current;

South West Marine Park Network	IUCN zones	Natural Values
		• South-west Transition—significant features of this area include the submarine canyons that incise the northern parts of the slope and the deep-water mixing that results from the dynamics of major ocean currents when these meet the seafloor, particularly in the Perth Canyon; and • South-west Shelf Transition—consists of a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including many endemic fauna species. Key ecological features: • Perth Canyon and adjacent shelf break, and other west-coast canyons; • Demersal slope and associated fish communities of the Central Western Province; • Western rock lobster; and • Mesoscale eddies. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Antarctic blue, pygmy blue and sperm whales, a migratory pathway for humpback, Antarctic blue and pygmy blue whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Swan River traditional owners have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial shipping, commercial fishing, recreation, including fishing, and defence training are important activities in this Marine Park.
Southern Kangaroo Island Marine Park	Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Southern Kangaroo Island Marine Park is located approximately 140 km south-west of Adelaide, adjacent to the South Australian Kangaroo Island Marine Park. This Marine Park covers an area of 630 km² extending from the South Australian State water boundary, and water depth ranges between 15 m and 100 m.
		Natural values The Marine Park includes examples of ecosystems representative of the Spencer Gulf Shelf. Seasonal winds and ocean currents interact with seafloor features to produce small seasonal upwellings that are important for biological productivity. The area is noted for its diverse seafloor communities, productivity hotspots and aggregations of marine life associated with seasonal upwellings of nutrient-rich water. A key ecological feature of this Marine Park is the Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. South Australian Native Title Services is the Native Title Service Provider for the South Australian region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation are important activities in this Marine Park. The Kangaroo Island community values the island's unique qualities and character.
South-west Corner Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI) Special Purpose (VI) Special Purpose (Mining Exclusion)	**Description** The South-west Corner Marine Park is located adjacent to the Western Australian Ngari Capes Marine Park, covering an extensive offshore area that is closest to Western Australia State waters approximately 48 km west of Esperance, 73 km west of Albany and 68 km west of Bunbury, and extends to the edge of Australia's exclusive economic zone. This Marine Park covers an area of 271,833 km² and a water depth range from less than 15 m to 6,400 m.
		Natural values This Marine Park includes ecosystems representative of: • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope incised by numerous, well-developed submarine canyons and the Diamantina Fracture Zone, a rugged area of deep seafloor comprising seamounts and many ridges and troughs. • South-west Transition—the main features of this area are the Naturaliste Plateau, the deepest submarine plateau along Australia's continental margins. The Naturaliste Plateau supports rich and diverse biological communities. Deep-water mixing results from the dynamics of major ocean currents when these meet the seafloor. • South-west Shelf Province—marine life in this area is diverse and influenced by the warm waters of the Leeuwin Current. A small upwelling of nutrient-rich water off Cape Mentelle during summer increases productivity locally, attracting aggregations of marine life. Key ecological features: • Albany Canyon group and adjacent shelf break; • Cape Mentelle upwelling; • Diamantina Fracture Zone; • Naturaliste Plateau; • Western rock lobster; and • Ancient coastline between 90 m and 120 m depth.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and sperm whales, a migratory pathway for Antarctic blue, pygmy blue and humpback whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Nyungar/Noongar people have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park. This Marine Park contains 10 known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing, commercial shipping, and recreation, including fishing, are important activities in this Marine Park.
Twilight Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Twilight Marine Park is located approximately 245 km south-west of Eucla and 373 km north-east of Esperance, adjacent to the Western Australian State water boundary. This Marine Park covers an area of 4,641 km² and water depths between less than 15 m and 70 m.
		Natural values This Marine Park includes ecosystems representative of the Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. There are diverse invertebrate communities inhabiting the seafloor. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Mirning and Spinifex people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The Goldfields Land and Sea Council is the Native Title Representative Body for the Goldfields region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park**.**
		Social and economic values Tourism and commercial and recreational fishing are important activities in this Marine Park.
Two Rocks Marine Park	Multiple Use (VI)	**Description** The Two Rocks Marine Park is located approximately 25 km north-west of Perth, to the north-west of the Western Australian Marmion Marine Park. The Marine Park covers an area of 882 km², extending from the Western Australian State water boundary, and a water depth range from 15 m to 120 m.
		Natural values This Marine Park includes examples of ecosystems representative of the South-west Shelf Transition—an area of narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including endemic fauna species. The inshore lagoons are thought to be important areas for benthic productivity and recruitment for marine species. Key ecological features: • Commonwealth marine environment within and adjacent to the west-coast inshore lagoons; • Western rock lobster; and • Ancient coastline between 90 m and 120 m depth. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds and Australian sea lions, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Swan River traditional owners have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, recreation, including fishing, and scientific research are important activities in this Marine Park.
Western Eyre Marine Park	National Park Zone (II) Multiple Use Zone (VI) Special Purpose Zone (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Western Eyre Marine Park is located approximately 123 km² south-west of Port Lincoln and 28 km west of Streaky Bay, adjacent to South Australia's Investigator, West Coast Bays and Nuyts Archipelago Marine Parks. This Marine Park covers an area of 57,944 km², extending from the South Australian State water boundary to the edge of Australia's exclusive economic zone, and water depths range between 15 m and more than 6,000 m.

South West Marine Park Network	IUCN zones	Natural Values
		Natural values This Marine Park includes ecosystems representative of*:* • Spencer Gulf Shelf—seasonal winds and ocean currents interact with seafloor features to produce a number of small seasonal upwellings that are important for biological productivity. The area is noted for its very diverse seafloor communities, productivity hotspots and aggregations of marine life associated with seasonal upwellings of nutrient-rich water; • Great Australian Bight Shelf Transition—a vast and shallow area, characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion; and • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope; numerous, well-developed submarine canyons; and extensive mid-slope terraces such as the Ceduna Terrace. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings; • Mesoscale eddies; • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park provides connectivity between deeper offshore waters and the adjacent South Australian Investigator, West Coast Bays and Nuyts Archipelago Marine Parks. Waters surrounding the Nuyts Archipelago and Investigator Group form part of the ecologically important offshore islands that protect the coastline. This Marine Park is a hotspot for productivity, with feeding aggregations of marine mammals, sharks and seabirds. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, foraging habitat for Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The far west coast region of South Australia includes over 1,000 km of coastline along the Nullarbor Cliffs of the Great Australian Bight and the Nyuts Archipelago, and supports a sea-based tradition and culture. The Mirning people have a strong connection to land and sea country of the Nullarbor, and the Wirangu people have a strong connection to land and sea country across the remainder of the far west coastal region. Fishing is woven into the beliefs and values of this region, through the use of resources such as shell fish, periwinkles, abalone and razorfish; and the sharing of traditional fishing knowledge, catch and meals. The care and protection of these waters, the coastline, marine life and resources correspond directly with cultural stories, sites and knowledge. South Australian Native Title Services is the Native Title Service Provider for the South Australian region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, recreation and mining are important activities in this Marine Park.
Western Kangaroo Island Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI) Special Purpose Zone (VI)	**Description** The Western Kangaroo Island Marine Park is located approximately 230 km south-west of Adelaide and 110 km south of Port Lincoln, adjacent to the South Australian Western Kangaroo Island Marine Park. The Marine Park covers an area of 2,335 km² and water depths range between 15 m and 165 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Spencer Gulf Shelf. Seasonal winds and ocean currents interact with seafloor features to produce a number of small seasonal upwellings that are important for biological productivity. The area is noted for its diverse seafloor communities, productivity hotspots and aggregations of marine life associated with the seasonal upwellings of nutrient rich water. Key ecological features: • The ancient coastline between 90 m and 120 m depth; and • Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. South Australian Native Title Services is the Native Title Service Provider for the South Australian region
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation are important activities in this Marine Park. The Kangaroo Island community values the island's unique qualities and character.

11.5.4 North Marine Park Network

Table 11-4 describes the Commonwealth marine parks within the North Marine Park Network according to the North Marine Park Network Management Plan 2018 (DNP, 2018c)

Table 11-4 Summary of Commonwealth Australian Marine Parks (AMP)s for the North Marine Park Network

North Marine Park Network	IUCN Zones	Values
Arafura Marine Park	Multiple Use Zone (VI) Special Purpose Zone (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Arafura Marine Park is located approximately 256 km north-east of Darwin and 8 km offshore of Croker Island, Northern Territory. It extends from Northern Territory waters to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 22,924 km², and a water depth range from less than 15 m to 500 m.
		Natural values The Arafura Marine Park includes examples of ecosystems representative of: • Northern Shelf Province—a dynamic region, with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity, which correspond with aggregations of marine life within this Marine Park. • Timor Transition Province—includes continental slope, canyons, ridges, terraces and the Arafura Depression. The primary drivers of biological productivity are associated with deep water upwellings at canyon heads, driven by strong tides. The key ecological feature in this Marine Park is the tributary canyons of the Arafura Depression. The canyons channel deep ocean waters, enhancing productivity and supporting large predatory fish, whale sharks, sawfish and marine turtles, deep sea sponges, and barnacles. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include internesting habitat for marine turtles and important foraging and breeding habitat for seabirds.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Yuwurrumu members of the Mandilarri-Ildugij, the Mangalara, the Murran, the Gadura-Minaga and the Ngaynjaharr clans have responsibilities for sea country in this Marine Park. These clans have native title determined over part of their sea country, which is included in this Marine Park. The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region and is assisting these native title holders in the absence of a native title Prescribed Body Corporate. It is the point of contact for this Marine Park.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
		Description

North Marine Park Network	IUCN Zones	Values
Arnhem Marine Park	Special Purpose Zone (VI)	The Arnhem Marine Park is located approximately 100 km south-east of Croker Island and 60 km south-east of the Arafura Marine Park. It extends from Northern Territory waters surrounding the Goulburn Islands, to the waters north of Maningrida. This Marine Park covers an area of 7,125 km² and water depth ranges from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northern Shelf Province. Internal currents in the region drive a net clockwise movement of nutrient-rich coastal water contributing to high biological diversity. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat and a migratory pathway for marine turtles and seabirds.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The coastal First Nations people of West Arnhem Land have responsibilities for sea country in this Marine Park. This Marine Park contains sites which are registered under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Gulf of Carpentaria Marine Park	National Park Zone (II) Special Purpose Zone (Trawl) (VI)	**Description** The Gulf of Carpentaria Marine Park is located approximately 90 km north-west of Karumba, Queensland and is adjacent to the Wellesley Islands in the south of the Gulf of Carpentaria basin. This Marine Park covers an area of 23,771 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northern Shelf Province—a dynamic region with a gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within the Marine Park. Key ecological features: • Gulf of Carpentaria basin; • Gulf of Carpentaria coastal zone; • Plateaux and saddle north-west of the Wellesley Islands; and • Submerged coral reefs of the Gulf of Carpentaria. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging areas for seabirds and internesting and foraging areas for turtles.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years.

North Marine Park Network	IUCN Zones	Values
		The Lardil, Yangkaal, Kaiadlit and Gangalidda people of the Wellesley Islands have a continuing spiritual connection with their sea country and responsibilities for managing that country. They have had their native title rights recognised. Both the Thuwathu-Bujimulla Indigenous Protected Area (IPA) and the Wellesely Island Sea Claim determination extend over part of the Gulf of Carpentaria Marine Park. The Thuwathu-Bujimulla IPA includes 160 sites of cultural heritage significance and the largest collection of stone fish traps in the southern hemisphere. The Lardil, Yangkaal, Kaiadlit and Gangalidda people of the Wellesley Islands hold a wealth of cultural knowledge about their islands and sea country. They recognise the presence of the Rainbow Serpent (Thuwathu or Bujimulla) in cyclones, waterspouts and rainbows, and understand that the Rainbow Serpent has the power to cause a special type of sickness known as Markiriil in Lardil. They also consider that there are dangerous places on their country where spirits can do you harm if you are not accompanied by the right people for that area. Many prominent marine features, such as reefs, rocks, oyster banks or sand bars have their own specific names. Among these named sites are special 'story places', where significant events happened in the past, where people carry out ritual activities to maintain particular animal or plant species, or which are responsible for making tidal floods, cyclones or strong winds. The Lardil people, as the traditional owners of Mornington Island and surrounding sea country, are recognised as the people of the Wellesley Islands with the authority to speak for sea country within the Gulf of Carpentaria Marine Park. The Gulf Region Aboriginal Corporation Prescribed Body Corporate represents the Lardil, Yangkaal, Kaiadlit and Gangalidda native title holders of the Wellesley Islands and is the point of contact for this Marine Park. The Carpentaria Land Council Aboriginal Corporation is the Native Title Representative Body for the region.
		Heritage values This Marine Park contains four known shipwrecks listed under the *Historic Shipwrecks Act 1976— Douglas Mawson* (wrecked in 1923); *A.D.C*. (wrecked in 1886); *Wild Duck* (wrecked in 1876); and *Ada* (wrecked 1886). No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Limmen Marine Park	Habitat Protection Zone (IV)	**Description** The Limmen Marine Park is located approximately 315 km south-west of Nhulunbuy, Northern Territory, in the south-west of the Gulf of Carpentaria. It extends from Northern Territory waters, between the Sir Edward Pellew Group of Islands and Maria Island in the Limmen Bight, adjacent to the Northern Territory Limmen Bight Marine Park. This Marine Park covers an area of 1,399 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northern Shelf Province—a dynamic region with gently sloping shelf, topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. The key ecological feature in this Marine Park is the Gulf of Carpentaria coastal zone—nutrients from rivers flowing into the coastal zone support high productivity and diverse biota. A prominent seafloor feature within this Marine Park is the Labyrinthian Shoals, a group of sand banks, some with rocky heads, in depths of less than 1.8 m. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include internesting and foraging habitat for marine turtles.
		Cultural values

North Marine Park Network	IUCN Zones	Values
		Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Marra people have responsibilities for sea country in this Marine Park, and share song-lines that travel through this Marine Park with the Yanyuwa People. The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Wessel Marine Park	Habitat Protection Zone (IV) Special Purpose Zone (Trawl) (VI)	**Description** The Wessel Marine Park is located approximately 22 km east of Nhulunbuy, Northern Territory. It extends from Northern Territory waters adjacent to the tip of the Wessel Islands to Northern Territory waters adjacent to Cape Arnhem. This Marine Park covers an area of 5,908 km² and water depths between 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northern Shelf—a dynamic region with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. The key ecological feature in this Marine Park is the Gulf of Carpentaria basin—characterised by soft sediments that support abundant and diverse communities dominated by polychaetes, crustaceans, molluscs and echinoderms, with pelagic fish species such as shark, snapper, tuna and mackerel. This Marine Park overlaps the Arafura Sill, which is a seafloor barrier that restricts movement of water into the Gulf of Carpentaria basin and forms a distinct biogeographical transition point for sessile invertebrate (e.g. sponges and corals) and fish species. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds and internesting and foraging habitat for marine turtles.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Yolŋu people have responsibilities for sea country in this Marine Park. This Marine Park contains sites which are registered under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
		Description

North Marine Park Network	IUCN Zones	Values
West Cape York Marine Park	National Park Zone (II) Habitat Protection Zone (IV) Special Purpose Zone (VI).	The West Cape York Marine Park is located adjacent to the northern end of Cape York Peninsula approximately 25 km south-west of Thursday Island and 40 km north-west of Weipa, Queensland. It extends from Queensland State waters to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 16,012 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of: • Northeast Shelf Transition—includes continental shelf, shallow water depths and high bottom salinity. It is influenced by tidal currents and has sandy substrates and reefs supporting benthic marine communities, reef-dwelling and pelagic species. • Northern Shelf Province—a dynamic region with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. Key ecological features: • Gulf of Carpentaria basin; and • Gulf of Carpentaria coastal zone. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting and foraging habitat for marine turtles and dugong, and foraging, breeding and calving habitat for dolphins.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. Torres Strait Islanders and coastal First Nations people of the west coast of Cape York have responsibilities for sea country in this Marine Park. The Cape York Land Council is the Native Title Representative Body for the Cape York region, which includes most of this Marine Park. The Carpentaria Aboriginal Land Council and the Torres Strait Regional Authority also perform the function of Native Title Representative Bodies for parts of this Marine Park.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park. The Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976*.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Oceanic Shoals	National Park Zone (II) Multiple Use (VI) Oceanic Shoals Special Purpose (Trawl) (VI) Habitat Protection (IV)	**Description** The Oceanic Shoals Marine Park is located west of the Tiwi Islands, approximately 155 km north-west of Darwin, Northern Territory and 305 km north of Wyndham, Western Australia. It extends to the limit of Australia's exclusive economic zone. The Marine Park covers an area of 71,743 km² and water depths from less than 15 m to 500 m.
		Natural values This Marine Park includes ecosystems representative of the Northwest Shelf Transition— a dynamic environment influenced by strong tidal currents, upwellings of nutrient-rich waters, and a range of prominent seafloor features. The pinnacles, carbonate banks and shoals are sites of enhanced biological productivity.

North Marine Park Network	IUCN Zones	Values
		Key ecological features: • Carbonate bank and terrace systems of the Van Diemen Rise; • Carbonate bank and terrace system of the Sahul Shelf; • Pinnacles of the Bonaparte Basin; and • Shelf break and slope of the Arafura Shelf. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging and internesting habitat for marine turtles.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. At the commencement of this plan, there was limited information about the cultural significance of this Marine Park. The Northern Land Council and the Kimberley Land Council are the Native Title Representative Bodies for the Northern Territory's northern region, and the Kimberley region. The Tiwi Land Council collectively represents traditional owners of the Tiwi Islands.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing and mining are important activities in this Marine Park.
Joseph Bonaparte Gulf Marine Park	Multiple Use Zone (VI) Special Purpose Zone (VI) (NMR only)	**Description** The Joseph Bonaparte Gulf Marine Park is located approximately 15 km west of Wadeye, Northern Territory, and approximately 90 km north of Wyndham, Western Australia, in the Joseph Bonaparte Gulf. It is adjacent to the Western Australian North Kimberley Marine Park. This Marine Park covers an area of 8,597 km² and water depth ranges between less than 15 m and 100 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Transition— a dynamic environment influenced by strong tidal currents, monsoonal winds, cyclones and wind generated waves. The large tidal ranges and wide intertidal zones near this Marine Park create a physically dynamic and turbid marine environment. The key ecological feature in this Marine Park is the carbonate bank and terrace system of the Sahul Shelf—characterised by terraces, banks, channels and valleys supporting sponges, soft corals, sessile filter feeders, polychaetes and ascidians. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for marine turtles and the Australian snubfin dolphin.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Miriuwung, Gajerrong, Doolboong, Wardenybeng and Gija and Balangarra people have responsibilities for sea country in this Marine Park. They are represented by the following Prescribed Bodies Corporate: Miriuwung and Gajerrong Aboriginal Corporation, and Balanggarra Aboriginal Corporation. These corporations are the points of contact for their respective areas of sea country in this Marine Park. The

North Marine Park Network	IUCN Zones	Values
		Northern Land Council and the Kimberley Land Council are the Native Title Representative Bodies for the Northern Territory's northern region, and the Kimberley region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park, however this Marine Park is adjacent to the West Kimberley National Heritage Place.
		Social and economic values Tourism, commercial fishing, mining, and recreation including fishing, are important activities in this Marine Park.

11.6 Threatened Ecological Communities

No Threatened Ecological Communities (TECs) as listed under the EPBC Act are known to occur within the marine waters of the NWMR, or NMR as indicated by the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). The Monsoon vine thickets (which is a TEC) occurs on the coastal dunes of Dampier Peninsula (NWMR). The subtropical and temperate coastal saltmarsh (which is a TEC) occurs within the marine water of the SWMR. Both TECs are described in **Table 11-5.**

Table 11-5 Summary of Threatened Ecological Communities within the NWMR, NMR and SWMR.

Threatened Ecological Community	Description	Conservation Values
Threatened Ecological Communities in the NWMR		
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	The ecological community represents certain occurrences of monsoon vine thickets in the southwest Kimberley region of Western Australia, predominantly restricted to the coastlines of the Dampier Peninsula from Broome in the south to One Arm Point in the north and on the northeastern coast of the Peninsula from One Arm Point to Goodenough Bay (DSEWPaC, 2013d). The TEC occurs as discontinuous patches of dense vegetation and contains approximately 23% of vascular plant species that occur on the Dampier Peninsula. The ecological community contains deciduous, semi-deciduous and evergreen perennial flora species (DSEWPaC, 2013d).	The Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula ecological community is listed as endangered (DSEWPaC, 2013d). The extent of the ecological community corresponds to country (the traditional lands) of the Bardi Jawi, Djabera Djabera, Goolarabaloo, Jabirr Jabirr, Nyul Nyul and Yawuru Indigenous people. The ecological community is of cultural significance (DSEWPaC, 2013d). Patches of the TEC operate as an ecological network with birds, mammals and frugivore species providing connectivity. The vegetation provides refuge for animals (DSEWPaC, 2013d).
Threatened Ecological Communities in the NMR		
N/A		
Threatened Ecological Communities in the SWMR		
Subtropical and Temperate Coastal Saltmarsh	The ecological community spans six state jurisdictions: Queensland (southern), New South Wales, Victoria, Tasmania, South Australia and Western Australia (south-western) (DSEWPaC, 2013c). The TEC occupies a relatively narrow strip along the Australian coast, in areas which have an intermittent or regular tidal influence. The coastal saltmarsh community consists mainly of salt-tolerant vegetation including grasses, herbs, sedges, rushes and shrubs. (Adam, 1990 cited in DSEWPaC, 2013c).	The Subtropical and Temperate Coastal Saltmarsh TEC is listed as vulnerable (DCCEEW, 2023a). This TEC consists of organisms including and associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (DSEWPaC, 2013c). A wide range of infaunal and epifaunal invertebrates and low and high tide visitors such as fish, birds and prawns also inhabit the TEC (DSEWPaC, 2013c). It is reported as an important nursery habitat for fish and prawn species. The dominant marine residents are benthic invertebrates, including molluscs and crabs (Ross et al., 2009 cited in DSEWPaC, 2013c) with insects also abundant and considered an important food source for fauna (DSEWPaC, 2013c).

11.7 Australian Whale Sanctuary

The Australian Whale Sanctuary has been established to protect all whales and dolphins found in Australian waters. Under the EPBC Act all cetaceans (whales, dolphins and porpoises) are protected in Australian waters.

The Australian Whale Sanctuary includes all Commonwealth waters from the three nautical mile State/Territory waters limit out to the boundary of the economic exclusion zone (i.e. out to 200 nm and further in some places). Within the Australian Whale Sanctuary it is an offence to kill, injure or interfere with a cetacean. Severe penalties apply to anyone convicted of such offences.

11.8 State Marine Parks and Reserves

State Marine Parks and Reserves, proclaimed under the *Conservation and Land Management Act 1984* (WA) (CALM Act), are located in State waters and vested in the WA Conservation and Parks Commission. State Marine Parks and Reserves of Western Australia have been considered, with 10 occurring in the NWMR (**Table 11-6**) and six occurring in the SWMR (**Table 11-7**).

Three new marine parks were established in 2022 in the Buccaneer Archipelago of the Kimberley. Boundaries commenced on July 1, 2023. The parks have been co-designed and are joint-managed by Traditional Owners, alongside with the Department of Biodiversity, Conservation and Attractions (DBCA, 2021b). The three new marine parks are:

- Bardi Jawi Gaarra Marine Park;
- Lalang-gaddam Marine Park (formed from the amalgamation of Lalang-garram/Camden Sound Marine Park, Lalang-garram/Horizontal Falls Marine Park, North Lalang-garram Marine Park and Maiyalam Marine Park along Western Australia's Kimberley Coast); and
- Mayala Marine Park.

There is a marine park to be defined in the Exmouth Gulf (EPA, 2022). The Exmouth Gulf Taskforce Interim Report to the Minister for Environment (DWER, 2023) outlines the values and recommended management approach of the Exmouth Gulf Marine Park.

11.9 Summary of Protected Areas within the NWMR

Table 11-6 Protected Areas within the NWMR

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
World Heritage Properties					
Shark Bay World Heritage Property	-	-	✓		**Description** The Shark Bay World Heritage Property is adjacent to the Shark Bay AMP and was included on the World Heritage List in 1991 (UNESCO, 1991). **Conservation Values** Universal values of the Shark Bay World Heritage Property include large and diverse seagrass beds, stromatolites and populations of dugong and threatened species. Inscribed under Natural Criteria vii, viii, ix and x (UNESCO, 1991).
The Ningaloo Coast World Heritage Property	-	-	✓		**Description** The Ningaloo Coast World Heritage Property is approximately 710,000 ha and lies within the Ningaloo AMP and was included on the World Heritage List in 2011 (UNESCO, 2011). **Conservation Values** Universal values of the Ningaloo Coast World Heritage Property include high marine species diversity and abundance; in particular, Ningaloo Reef supports both tropical and temperate marine reptiles and mammals. Inscribed under Natural Criteria vii and x (UNESCO, 2011).
National Heritage Places – Natural					
Shark Bay	-	-	✓		**Description** The Shark Bay National Heritage Place consists of the same area included in the Shark Bay World Heritage Property (refer above) and was established on the National Heritage List in 2007 (DEC, 2008). **Conservation Values** This national heritage place has a number of exceptional natural features, including one of the largest and most diverse seagrass beds in the world, colonies of stromatolites and rich marine life including a large population of dugongs, and also provides a refuge for a number of other globally threatened species. Shark Bay meets the national heritage listing criteria a, b, c, d, e, f, g, h and I (DEC, 2008).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
The Ningaloo Coast	-	-	✓		**Description** The Ningaloo Coast National Heritage Place consists of the same area included in the Ningaloo Coast World Heritage Property (refer above) and was established on the National Heritage List in 2010 (Commonwealth of Australia, 2010).
					Natural Values The Ningaloo Coast contains one of the best developed near-shore reefs in the world, being home to rugged limestone peninsulas, spectacular coral and sponge gardens and the whale shark. The Ningaloo Coast meets the national heritage listing criteria a, b, c, d, and f (Commonwealth of Australia, 2010).
The West Kimberley	✓	✓	-		**Description** The West Kimberley National Heritage Place covers an area of around 192,000 km^2 located in the north-west of Australia from Broome to Wyndham, and was established on the National Heritage List in 2011 (Commonwealth of Australia, 2011).
					Conservation Values The Kimberley plateau, north-western coastline and northern rivers of the West Kimberley provide a vital refuge for many native plants and animals that are found nowhere else or which have disappeared from much of the rest of Australia. In addition, Roebuck Bay is internationally recognised as one of Australia's most significant sites for migratory wading birds. This national heritage place also contains a remarkable history of First Nations occupation, with many places of indigenous sacred value. The West Kimberley meets the national heritage listing criteria a, b, c, d, e, f, g, h and I (Commonwealth of Australia, 2011).
Commonwealth Heritage Places – Natural					
Mermaid Reef – Rowley Shoals	-	✓	-		**Description** The Mermaid Reef – Rowley Shoals Commonwealth Heritage Place is located within the boundary of the Mermaid Reef Marine National Nature Reserve. The site was listed as a Commonwealth Heritage Place in 2004 (DCCCEEW, n.d.-a).
					Conservation Values The Mermaid Reef-Rowley Shoals Commonwealth Heritage Place is regionally important for the diversity of its fauna and together with Clerke

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					and Imperieuse reefs, has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fishes known previously only from Indonesian waters. Rowley Shoals is important for benchmark studies as one of the few places off the north-west coast of Western Australia which have been the site of major biological collection trips by the WA Museum (DCCCEEW, n.d.-a).
Ashmore Reef National Nature Reserve	✓	-	-		**Description** The Ashmore Reef Commonwealth Heritage Place is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, n.d-d).
					Conservation Values Ashmore Reef has major significance as a staging point for wading birds migrating between Australia and the Northern Hemisphere and supports high concentrations of breeding seabirds, many of which are nomadic and typically breed on small isolated islands. Ashmore Reef is an important scientific reference area for migratory seabirds, sea snakes and marine invertebrates. The Ashmore Reef Commonwealth Heritage Place is significant for its history of human occupation and use. The island is believed to have been visited by Indonesian fisherman since the early eighteenth century. The islands were used both for fishing and as a staging point for voyages to the southern reefs off Australia's coast (DCEEW, n.d-d).
Scott Reef and Surrounds – Commonwealth Area	✓	-	-		**Description** Scott Reef and Surrounds Commonwealth Heritage Place is located within the Western Australian Coastal Waters surrounding North and South Scott Reef. The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, n.d-e).
					Conservation Values The Scott Reef and Surrounds Commonwealth Heritage Place is regionally important for the diversity of its fauna and has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fish known previously only from Indonesian waters. Scott Reef is recognised as important for scientific research and benchmark studies due to its age, the extensive documentation of its

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					geophysical and physical environmental characteristics and its use as a site of major biological collection trips and surveys by the WA Museum and the Australian Institute of Marine Science (DCEEW, n.d-e).
Ningaloo Marine Area – Commonwealth Waters	-	-	✓		**Description** The Ningaloo Marine Area Commonwealth Heritage Place is located within the Commonwealth waters of the Ningaloo Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, n.d-f).
					Conservation Values The Ningaloo Marine Area Commonwealth Heritage Place provides a migratory pathway for humpback whales and foraging habitat for whale shark. The place is an important breeding area for billfish and manta ray. The Ningaloo Marine Area provides opportunities for scientific research relating to aspects of the area's unique features including tourism (marine ecology, whales, turtles, whale shark, fish and oceanography (DCEEW, n.d-f).
Yampi Defence Area	✓	-	-		**Description** Located 35 km south of Koolan Island the Yampi Defence Area displays a unique mosaic of geographical landforms that is unique to the region. The occurrence of such diverse landscapes within a small area is an unusual occurrence (DCCEEW, n.d.-c).
					Conservation Values The Yampi Defence Area occurs at the confluence of three biogeographic regions in the North-west of Australia. It exhibits diverse landforms, soils, and vegetation representative of the sandstone plateaux of the wetter areas of the North-west Kimberley to the broad plains and pindin scrub of the drier areas in the South-west Kimberley. The Yampi peninsula contains one of the richest amphibian records in the Kimberley. The Yampi Defence Area meets the Commonwealth heritage listing criteria a,b,c (DCCEEW, n.d.-c).
Learmonth Air Weapons Range Facility	-	-	✓		**Description** Located along the Ningaloo coastline, the Learmonth Air Weapons Range Facility was one of Australia's most active bombing ranges until 1990. It is

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					of considerable importance in documenting sea level and landform changes since the late Cenozoic period (DCCEEW, n.d.-b).
					Conservation Values The area includes an ancient reef complex and cave fauna that is of exceptional importance. The ages of the reef terraces are key to understanding the timing of uplift events. The Learmonth Air Weapons Range Facility meets the Commonwealth heritage listing criteria a,b,c (DCCEEW, n.d.-b).
Wetlands of International Importance (Ramsar)					
Ashmore Reef National Nature Reserve	✓	-	-	Ramsar	**Description** The Ashmore Reef Ramsar site is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed under the Ramsar Convention in 2002 (Commonwealth of Australia, 2002b).
					Conservation Values The Ashmore Reef Ramsar site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugong, and has the highest diversity of hermatypic (reef-building) corals on the Western Australian coast. It is known for its abundance and diversity of sea snakes. However, since 1998 populations of sea snakes at Ashmore Reef have been in decline (Commonwealth of Australia, 2002b).
					Cultural Values Indonesian fishers have regularly visited Ashmore Reef since the early eighteenth century to fish within the area and use the islands for staging points before travelling to other reefs in the region. Indonesian artefacts have been found on Cartier Island, and West, Middle and East Islands (Commonwealth of Australia, 2002b).
Eighty Mile Beach	-	✓	-	Ramsar	**Description** The Eighty Mile Beach Ramsar site covers an area of 1,250 km^2, located along a long section of the Western Australian coastline adjacent to the Eighty Mile Beach AMP (refer below) (CALM, 2003a).
					Conservation Values The Eighty Mile Beach Ramsar site includes saltmarsh and a raised peat bog more than 7,000 years old.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The site contains the most important wetland for waders in north-western Australia, supporting up to 336,000 birds, and is especially important as a land fall for waders migrating south for the austral summer (CALM, 2003a).
Roebuck Bay	-	✓	-	Ramsar	**Description** The Roebuck Bay Ramsar site covers an area of 550 km^2, located south of Broome and adjacent to the Roebuck AMP (refer below) (CALM, 2003b).
					Conservation Values The Roebuck Bay Ramsar site is recognised as one of the most important areas for migratory shorebirds in Australia. The site regularly supports over 100,000 waterbirds, with numbers being highest in the austral spring when migrant species breeding in the Palearctic stop to feed during migration. Roebuck Bay supports one of the largest known populations of Australian snubfin dolphins (*Orcaella heinsohni*)—a species with a limited distribution, vulnerable conservation status, and high cultural value (CALM, 2003a; D'Cruz *et.al.*, 2022).
Ord River Floodplain	✓			Ramsar	**Description** The Ord River Floodplain Ramsar site is in the East Kimberley region and encompasses an extensive system of river, seasonal creek, tidal mudflat, and floodplain wetlands. The site is a nursery, feeding and/or breeding ground for migratory birds, waterbirds, fish, crabs, prawns, and crocodiles. The site supports vulnerable species under the EPBC Act, including: Freshwater Sawfish (*Pristis microdon*), Green Sawfish (*Pristis zijsron*) and the Australian Painted Snipe (*Rostratula australis*). The site is also one of the only two known habitats in WA of the nationally endangered Northern River Shark (*Glyphis garricki*) (DCCEEW, 2019a).
					Conservation Values The site represents the best example of wetlands associated with the floodplain and estuary of a tropical river system in the Tanami-Timor Sea Coast Bioregion in the Kimberley. In addition, the False Mouths of the Ord are the most extensive mudflat and tidal waterway complex in Western Australia (DCCEEW, 2019a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Wetlands of National Importance (DAWE, 2019)					
Ashmore Reef	✓	-	-		**Description** Ashmore Reef is a shelf-edge platform reef located among the Sahul Banks of north-western Australia. It covers an area of 583 km^2 and consists of three islets surrounded by intertidal reef and sand flats (DCCEEW, 2019b). **Conservation Values** These islets are major seabird nesting sites with 20 breeding species recorded to date. The total bird population has been estimated to exceed 100,000 during the peak breeding season. The marine reserve also has the highest diversity of marine fauna of the reefs on the NWS and differs from other reefs and coastal areas in the region. The area meets criteria 1, 3, 4 and 5 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Mermaid Reef	-	✓	-		**Description** Mermaid Reef Marine Park covers an area of around 540 km^2, located ~280 km west north-west of Broome, and is the most north-easterly atoll of the Rowley Shoals (DCCEEW, 2019b). **Conservation Values** The reefs of the Mermaid Reef Marine Park have biogeographic value due to the presence of species that are at or close to the limit of their distribution. The coral communities are one of the special values of Mermaid Reef. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Exmouth Gulf East	-	-	✓		**Description** Exmouth Gulf East covers an area of 800 km^2 and includes wetlands in the eastern part of Exmouth Gulf, from Giralia Bay; to Urala Creek, Locker Point (DCCEEW, 2019b). **Conservation Values** The Exmouth Gulf East is an outstanding example of tidal wetland systems of the low coast of north-west Australia, with well-developed tidal creeks, extensive mangrove swamps and broad saline coastal flats.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The site is one of the major population centres for dugong in WA and its seagrass beds and extensive mangroves provide nursery and feeding areas for marine fishes and crustaceans in the Gulf. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Hamelin Pool	-	-	✓		**Description** Hamelin Pool covers an area of 900 km^2 in the far south-east part of Shark Bay (DCCEEW, 2019b).
					Conservation Values Hamelin Pool is an outstanding example of a hypersaline marine embayment and supports extensive microbialite (subtidal stromatolite) formations, which are the most abundant and diverse examples of growing marine microbialites in the world. The area meets criteria 1 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Shark Bay East	-	-	✓		**Description** Shark Bay East covers a 250 km area of coastline comprising tidal wetlands, and marine waters less than 6 m deep at low tide, in the east arm of Shark Bay (DCCEEW, 2019b).
					Conservation Values The site is an outstanding example of a very large, shallow marine embayment, with particularly extensive occurrence of seagrass beds and substantial areas of intertidal mud/sandflats and mangrove swamp. The site supports what is probably the world's largest discrete population of dugong; it is also a major nursery and/or feeding area for turtles, rays, sharks, other fishes, prawns and other marine fauna; and is a major migration stop-over area for shorebirds. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
State Marine Parks and Reserves					
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	**Description** The North Kimberley Marine Park covers. 18,450 km^2 with its south-western boundary located ~270 km north-east of Derby (DPAW, 2016a).
					Conservation Values

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The marine park covers approximately 1,845,000 hectares. The coral reefs of the North Kimberley have the greatest diversity in Western Australia and are some of the most pristine and remarkable reefs in the world. The park surrounds more than 1,000 islands and is home to listed species such as dugongs, marine turtles, and sawfishes (DPAW, 2016a). **Social and Economic Values** The park features diverse wildlife, remarkable scenery and cultural heritage which provides excellent opportunities for tourism experiences, recreational and nature-based activities such as fishing and hunting (DPAW, 2016a). **Cultural Values** The Wunambal Gaambera, Balanggarra, Ngarinyin and Miriuwung Gajerrong people have strong and ongoing cultural connections to the North Kimberley saltwater country and rely on coastal and marine environments and resources for their cultural identity, livelihoods and economy (DPAW, 2016a).
Rowley Shoals Marine Park	-	✓	-	Sanctuary, Recreation and General Use Zones	**Description** The Rowley Shoals comprise of three reef systems, Mermaid Reef, Clerke Reef and Imperieuse Reef, all 30-40 km apart. These reef systems are located ~300 km west north-west of Broome (DEC, 2007a). **Conservation Values** The three coral atolls of the Rowley Shoals Marine Park comprise of shallow lagoons inhabited by diverse corals and abundant marine life, each covering around 80 km^2 at the edge of Australia's continental shelf (DEC, 2007a). Further offshore, the seafloor slopes away to the abyssal plain, some 6,000 m below. Undersea canyons slice the slope; these features are commonly associated with diverse communities of deep-water corals and sponges and create localised upwellings that aggregate pelagic species like tunas and billfish (DEC, 2007a). **Social and Economic Values** Due to its remote location, the Rowley Shoals has low numbers of visitors with most arriving aboard licenced charter boats. Popular activities in the area include scuba diving, recreational fishing, and boating (DEC, 2007a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Yawuru Nagulagun / Roebuck Bay Marine Park	-	✓	-	Special Purpose Zone	**Description** Yawuru Nagulagun / Roebuck Bay Marine Park is a series of intertidal flats lying on the coast to the south-east of Broome.
					Conservation Values Roebuck Bay is an internationally significant wetland and one of the most important feeding grounds for migratory shorebirds in Australia. Australian snubfin and Australian humpback dolphins frequent the waters and humpback whales pass through on their annual migration. Flatback turtles nest on the shores and are found in the bay's waters with other sea turtle species. Seagrass and macroalgae communities provide food for protected species such as the dugong and flatback turtles (DPAW, 2016b).
					Social and Economic Values The marine park is adjacent to Broome and supports tourism activities and provides an active outdoor lifestyle for the residents of the region (DPAW, 2016b).
					Cultural Values The Yawuru people have lived along the shores of Roebuck Bay for thousands of years and have a dynamic and enduring relationship with the Yawuru country. The coastline is important for cultural activities and is a place for hunting, fishing, gathering and camping for the Yawuru people (DPAW, 2016b).
Eighty Mile Beach Marine Park	-	✓	-	Sanctuary, Recreation, Special Purpose and General Use Zones	**Description** Eighty Mile Beach Marine Park covers ~2000 km^2 stretching across 220 km of coastline between Port Hedland and Broome (DPAW, 2014a).
					Conservation Values Eighty Mile Beach Marine Park is one of the world's most important feeding grounds for small wading birds that migrate to the area each summer, travelling from countries thousands of kilometres away. The marine park is a major nesting area for flatback turtles which are found only in northern Australia. Sawfishes, dugongs, dolphins and millions of invertebrates inhabit the sand and mud flats, seagrass meadows, coral reefs and mangroves (DPAW, 2014a).
					Social and Economic Values Social values of the marine park include tourism, nature-based recreational activities and commercial fishing (DPAW, 2014a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Cultural Values The Karajarri, Nyangumarta and Ngarla people have a powerful connection to the land and sea of this region. Traditional hunting and fishing are important cultural activities for the traditional owners of this marine park (DPAW, 2014a).
Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area (jointly managed)	-	✓	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area are located off the north-west coast of WA, ~1,600 km north of Perth, and cover areas of ~583 km^2, 42 km^2 and 1,147 km^2, respectively (DEC, 2007b).
					Conservation Values The Montebello/Barrow Islands marine conservation reserves have very complex seabed and island topography, resulting in a myriad of different habitats, subtidal coral reefs, macroalgal and seagrass communities, subtidal soft-bottom communities, rocky shores and intertidal reef platforms, which support a rich diversity of invertebrates and finfish. The reserves are important breeding areas for several species of marine turtles and seabirds, which use the undisturbed sandy beaches for nesting. Humpback whales migrate through the reserves and dugongs occur in the shallow warm waters (DEC, 2007b).
					Social and Economic Values Major commercial fishing and pearling occur within the area which provide employment and economic value to surrounding communities. Nature based-tourism, water sports and recreational fishing are popular recreational activities undertaken in the area (DEC, 2007b).
					Cultural Values There are no recorded seabed aboriginal sites within this park. However, it is possible there are aboriginal archaeological sites on the seabed that were created before the most recent sea level rise (DEC, 2007b).
Ningaloo Marine Park and Muiron Islands Marine Management Area (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Ningaloo Marine Park and Muiron Islands Marine Management Area are located off the North-west Cape, ~1,200 km north of Perth, and cover areas of ~2,633 km^2 and 286 km^2 respectively (CALM, 2005a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Ecological Values Ningaloo Reef is the largest fringing coral reef in Australia. Temperate and tropical currents converge in the Ningaloo region resulting in highly diverse marine life including spectacular coral reefs, abundant fishes and species with special conservation significance such as turtles, whale sharks, dugongs, whales and dolphins. The region has diverse marine communities including mangroves, algae and filter-feeding communities and has high water quality. These values contribute to the Ningaloo Marine Park being regarded as the State's premier marine conservation icon. The Muiron Islands Marine Management Area is also important, containing a very diverse marine environment, with coral reefs, filter-feeding communities and macroalgal beds. In addition, the Islands are important seabird and green turtle nesting areas (CALM, 2005a).
					Social and Economic Values The Ningaloo region has a high number of visitors enjoying the area who come to appreciate nature-based tourism which brings important economic value to the communities of the area (CALM, 2005a).
					Cultural Values The Ningaloo Reef has a long history of occupancy by aboriginal communities and aboriginal heritage sites. The Jinigudira and Baiyungu people have lived in this region for thousands of years and use coastal areas for fishing, camping and hunting of turtles and dugongs (CALM, 2005a).
Shark Bay Marine Park and Hamelin Pool Marine Nature Reserve (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Shark Bay Marine Park and Hamelin Pool Marine Nature Reserves are located 400 km north of Geraldton, covering areas of ~7,487 km^2 and 1,270 km^2, respectively (CALM, 1996).
					Conservation Values Seagrass covers over 4,000 km^2 of the Shark Bay Marine Park, with 12 different species making it one of the most diverse seagrass assemblages in the world. Dugongs regularly use this habitat, with the bay containing one of the largest dugong populations in the world. Humpback whales also use the bay as a staging post in their migration along the coast. Green and loggerhead turtles occur in the bay with Dirk Hartog Island providing the most important nesting site for loggerheads in Western Australia.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Hamelin Pool contains the most diverse and abundant examples of stromatolites found in the world. These are living representatives of stromatolites that existed some 3500 million years ago (CALM, 1996).
					Social and Economic Values Commercial fishing and tourism are important economic values of the region. Popular recreational activities include nature-based tourism, recreational fishing and water sports (DEC, 2008).
					Cultural Values The Malgana people occupy the land and waters in the vicinity of Shark Bay and have strong cultural connection to the region. The area is important for cultural practices and for fishing, hunting and camping for the Malgana people (DEC, 2008).
Bardi Jawi Gaarra Marine Park	✓	-	-	Sanctuary, Recreation, Special Purpose Zones (biocultural conservation and cultural protection), and General use	**Description** The Bardi Jawi Gaara Marine Park is located in the West Kimberley region surrounding the northern part of the Dampier Peninsula and the western islands of the Buccaneer Archipelago covering areas of ~2,040 km^2.
					Conservation Values The Bardi Jawi Gaara Marine Park has a tidal range of 11 m, which is the highest in Australia. The mangrove lined creeks, intertidal and fringing reef areas that encompass the coastline and islands are ecologically important and host a vast number of plants and animals that have adapted to the unique area. Migratory marine mammals including humpback whales migrate to the areas between June and November each year to birth their young. Dugongs visit the area in the cooler months from May to July (DBCA 2022a).
					Social and Economic Values Commercial fishing, pearling and aquaculture are important economic activities that occur within this region. The area is a popular tourism destination and hosts a number or recreational activities and water sports (DBCA 2022a).
					Cultural Values The Bardi and Jawi people have a significant connection to the animals, sites and places within this region which are connected by stories and songlines. The sea country is used for hunting, fishing, cultural activities and business (DBCA 2022a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Lalang-gaddam Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** Amended joint management plan for the Lalang-gaddam / Camden Sound, Lalang-gaddam / Horizontal Falls and North Lalang-gaddam marine parks, and indicative joint management plan for the proposed Maiyalam Marine Park. The Lalang-gaddam Marine Park is located in the Kimberley region of Western Australia and adjacent to Derby and the Shire of Wyndham. The Class A marine park covers ~13,085 km^2 (DBCA 2022b).
					Conservation Values The Lalang-gaddam / Camden Sound Marine Park is the most important humpback whale nursery in the Southern Hemisphere. It also features the spectacular coastal Montgomery Reef. The marine park is home to six species of threatened marine turtle. Australian snubfin and Indo-Pacific humpback dolphins, saltwater crocodiles, manta rays, several species of protected sawfish, and the world's large population of dugongs (~12,000). The Lalang-gaddam Marine Park's most celebrated attraction, The Horizontal Falls is created by massive tides of up to 10 m and narrow gaps in two parallel tongues of land meaning the tide falls faster than the water can escape, producing 'horizontal falls'. There are also islands with fringing coral reefs and mangrove-lined creeks and bays. This Marine Park has a number of islands fringed with coral reef and has been identified as an ecological hotspot and supports more than 1% of the world's population of brown boobies, with up to 2,000 breeding pairs. Approximately 500 pairs of crested terns also nest on the island (DBCA 2022b).
					Social and Economic Values This Marine Park has spectacular scenery which attracts a number of tourists and generates approximately $563 million annually. Recreational fishing and recreational maritime activities are popular within ths Marine Park. Commercial fisheries can operate within the waters of this Marine Park, however many do not regularly fish within this area. Pearling and aquaculture occurs within this Marine Park and provides economic value for the region (DBCA 2022b).
					Cultural Values

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The area is of cultural significance to the Dambeemangarddee people who have lived on the land and cared for land and sea country for tens of thousands of years. Some animals such as the barramundi and rock cod have particular cultural significance and are sacred animals to the Dambeemangarddee people. Numerous coastal and marine plants continue to be an important food source for the traditional owners of this Marine Park (DBCA 2022b).
Mayala Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Mayala Marine Park is a Class A reserve located in the West Kimberley region and covers ~3,150 km^2 (DBCA 2022c).
					Conservation Values The Mayala Marine Park has a tidal range of 11 m, the highest in Australia. The mangrove lined creeks, intertidal and fringing reef areas that encompass the coastline and islands are ecologically important and host a vast number of plants and animals that have adapted to the unique area. The seagrass communities provide habitat and food for many species including turtles and dugongs. Migratory marine mammals including humpback whales migrate to the areas between June and November each year to birth their young. Dugongs visit the area in the cooler months from May to July (DBCA 2022c).
					Social and Economic Values Due to the extraordinary natural values of the area, the number of visitors to the area has continued to grow over the years. Popular activities within the park include fishing, boating, and wildlife watching. The waters of this area provide optimal conditions for commercial fishing, pearling and aquaculture (DBCA 2022c).
					Cultural Values The area is of exceptional cultural significance to the Malaya people who are true saltwater people and use both land and sea resources and have a strong connection to the land, animals and plants of the region. This Marine Park has many sacred sites that occur on land and sea which include artefacts, fish traps, and man-made structures. This Marine Park is culturally significant to the Malaya people who care for country and use this Marine Park for fishing, hunting and camping (DBCA 2022c).

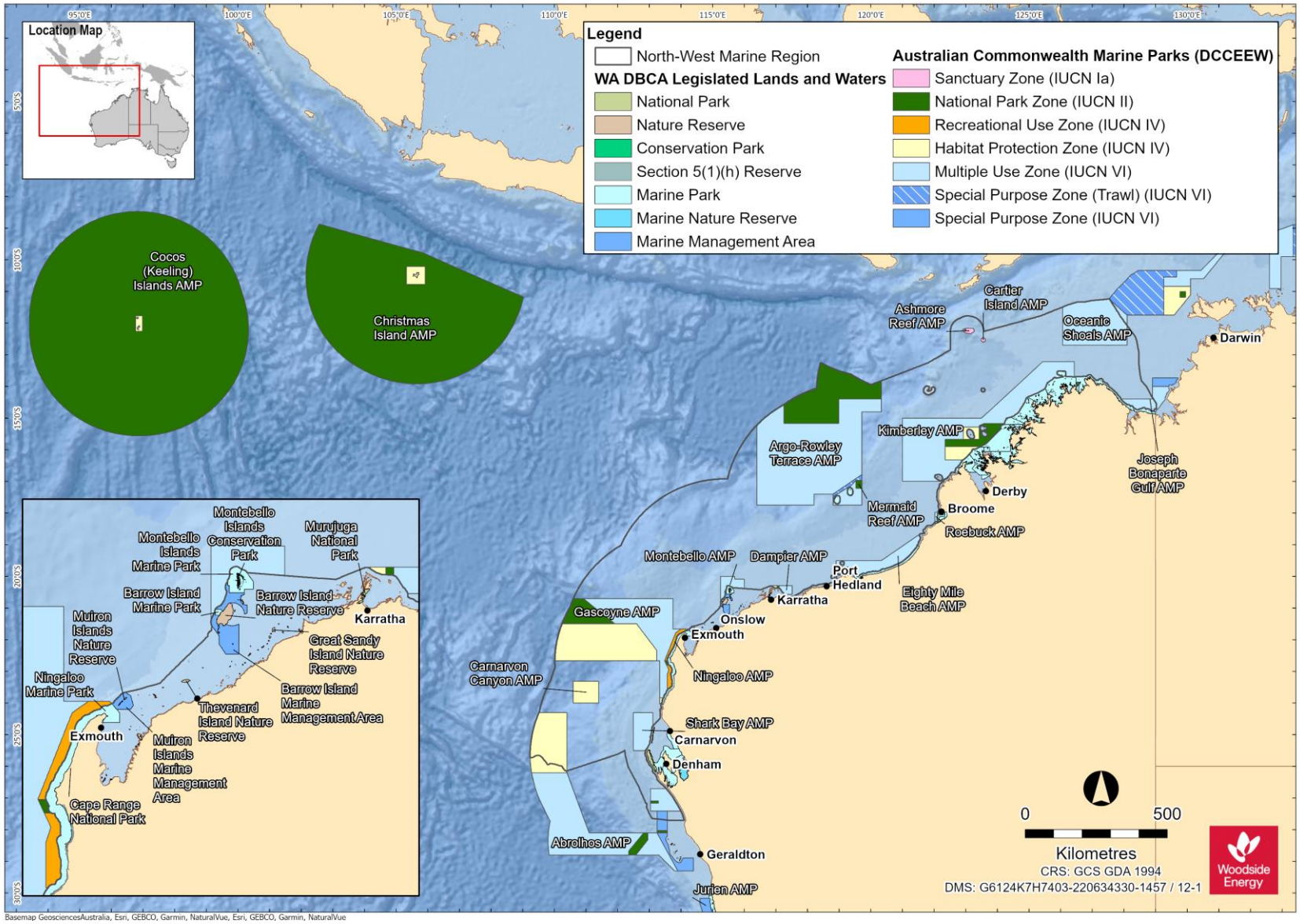


Figure 11-1 Commonwealth and State Marine Protected Areas for the NWMR and Indian Ocean Territories (data source: GA, 2024)

11.10 Summary of Protected Areas within the SWMR

Table 11-7 Protected Areas within the SWMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
World Heritage Properties		
Australian Convict Sites (Fremantle Prison)		**Description** Fremantle Prison contains well preserved remnants of the earliest phase of European settlement of Western Australia. The Prison includes 16 intact convict-built structures surrounded by a six-metre-high limestone perimeter wall. The prison is one of the largest surviving convict establishments in the world (DCCEEW, 2021a).
		Conservation Values The Australian Convict Sites represent the global phenomenon of convictism—- the forced migration of convicts to penal colonies in the 18th and 19th centuries (DCCEEW, 2021a).
National Heritage Places—- Natural		
N/A		
Commonwealth Heritage Places—- Natural		
Garden Island		**Description** Garden Island, and in particular the Cliff Point Historic Site, is highly valued by the community for its cultural associations as the site of first settlement in Western Australia. The absence of feral predators means that Garden Island provides a significant refuge for animals vulnerable to predation on the mainland (DAWE, 2004).
		Conservation Values It is likely that Indigenous values exist at this place. As yet these have not been identified, documented or assessed for National Estate significance by the Australian Heritage Commission. Species of particular interest include the Tammar wallaby (*Macropus eugenii*), carpet python (*Morelia spilota*), and the lined skink (*Lerista lineata*). The parabolic sand dunes on the western side of the island are among the best-preserved dunes of the Quindalup soil unit (DAWE, 2004).
Wetlands of International Importance (Ramsar)		
Becher Point Wetlands	Ramsar	**Description** Beecher Point Wetlands is a system of about sixty small wetlands located near Rockingham in south-west WA, covering an area of around 7 km^2. The site was listed under the Ramsar Convention in 2001 (DPAW, 2014b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Conservation Values The wetlands support sedgelands, herblands, grasslands, open-shrublands and low open-forests. The sedgelands that occur within the linear wetland depressions of the Ramsar site are a nationally listed threatened environmental community. At least four species of amphibians and 21 species of reptiles have been recorded on the site. The site also supports the southern brown bandicoot. The site meets criteria 1 and 2 of the Ramsar Convention (DPAW, 2014b).
Forrestdale and Thomsons Lakes	Ramsar	**Description** Forrestdale Lake is located in the City of Armadale and Thomsons Lake is located in the City of Cockburn both of which lie within the southern Perth metropolitan area, in Western Australia. The site was listed under the Ramsar Convention in 1990 (CALM, 2003c).
		Conservation Values The lakes are surrounded by medium density urban development and some agricultural land. The sediments of Thomsons Lake are between 30,000 and 40,000 years old, which are the oldest lake sediments discovered in WA to date. These lakes are the best remaining examples of brackish, seasonal lakes with extensive fringing sedgeland, typical of the Swan Coastal Plain. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention (CALM, 2003c).
Peel-Yalgorup System	Ramsar	**Description** The Peel-Yalgorup System, located adjacent to the City of Mandurah in Western Australia, is a large and diverse system of shallow estuaries, coastal saline lakes and freshwater marshes. The site was listed under the Ramsar Convention in 1990 (CALM, 2003d).
		Conservation Values The Peel-Yalgorup System Ramsar site is the most important area for waterbirds in south-western Australia. It supports a large number of waterbirds, and a wide variety of waterbird species. It also supports a wide variety of invertebrates, and estuarine and marine fish. The system also includes an occurrence of thrombolites. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention (CALM, 2003d).
Vasse-wonnerup system	Ramsar	**Description** The Vasse-Wonnerup System Ramsar wetland is situated in the Perth Basin, south-western Western Austraia. The site was listed under the Ramsar Convention in 1990 (DPAW, 2014b).
		Conservation Values The Vasse-Wonnerup System is an extensive, shallow, nutrient-enriched wetland system of highly varied salinities. Large areas of the wetland dry out in late summer. The Vasse-Wonnerup System supports tens of thousands of resident and migrant waterbirds of a wide variety of species. More than 80 species of waterbird have been recorded in the System such as

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		red-necked avocets and black-winged stilts, wood sandpiper, sharp-tailed sandpiper, long-toed stint, curlew sandpiper and common greenshank. 13 waterbird species are also known to breed at the Ramsar site, including the largest regular breeding colony of black swans in south-western Australia. The site meets criteria 5 and 6 of the Ramsar Convention (DPAW, 2014b).
Lake Warden System	Ramsar	**Description** The Lake Warden System Ramsar site is located adjacent to Esperance, south-western Australia. It is a system of saline lakes, lagoons and marsh areas behind beach-front dunes and at least one relatively narrow connection to the sea. The site was listed under the Ramsar Convention in 1990.
		Conservation Values The wetlands within the Lake Warden System form a system of inter-connected lakes and coastal brackish/saline lagoons connected by channels. It provides a significant habitat, nursery and refuge for waterbirds. Supporting up to 20,000 birds regularly. The System supports over 1% of Hooded Plovers in south-western Australia who breed regularly at the Lake Warden System. It meets criteria 1,5 and 6 of the Ramsar Convention (DEC, 2009b).
Wetlands of National Importance (DAWE, 2019)		
Rottnest Island Lakes		**Description** The Rottnest Island Lakes site is the cluster of 18 lakes and swamps on the north-east part of Rottnest Island (DCCEEW, 2019b).
		Conservation Values An outstanding example of a series of lakes/swamps of varied depth and salinity located on an offshore island; the only island among 200 plus in WA exceeding 10 ha in area, that has a salt-lake complex; the only known example of seasonally meromictic lakes in Australia. The area meets criteria 1, 2, 3 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
State Marine Parks and Reserves		
Jurien Bay Marine Park	Sanctuary, Special Purpose and General Use Zones.	**Description** The Jurien Bay Marine Park is located on the central west coast of WA ~200 km north of Perth and covers an area of 824 km^2 (CALM, 2005b).
		Ecological Values The Jurien Bay region is dominated by five major marine habitats: seagrass meadows, bare or sparsely vegetated mobile sand, shoreline and offshore intertidal reef platforms, subtidal limestone reefs, and reef pavement. An extensive limestone reef system parallel to the shore has created a huge shallow lagoon that provides perfect habitat for Australian sea lions, dolphins and a myriad of juvenile fish. Extensive seagrass meadows inside the reef shelter many marine animals such as western rock lobsters, octopus and cuttlefish that make up the diet of young sea lions. The marine park also surrounds dozens of ecologically important islands that contain rare and endangered animals found nowhere else in the world (CALM, 2005b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Social and Economic Values Commercial fishing for rock lobster has the highest economic value of any single species commercial fishery in Australia and is important for the economy of the Jurien Bay region. Recreational water activities such as fishing, boating, surfing, diving, and wind surfing are popular within the area (CALM, 2005b).
		Cultural Values The Nyungar people have occupied the land and waters in this region and depended on coastal resources for more than 30,000 years. There are burial sites, middens and other sites of significance listed within the region (CALM, 2005b).
Marmion Marine Park	Sanctuary, Recreation and Special Use Zones.	**Description** The Marmion Marine Park lies within State waters between Trigg Island and Burns Beach and encompasses a coastal area of ~95 km^2. Marmion Marine Park was the State's first marine park, declared in 1987 (CALM, 1992).
		Ecological Values The marine park has a number of sanctuary zones including Little Island, The Lumps and the Boyinaboat Reef protecting a variety of habitats from limestone reefs, seagrass beds and clear shallow lagoons that support a diversity of marine life. In addition, there are the general use zone and the Waterman Recreation Area. The marine park contains important habitat for the endemic Australian sea lion, an array of seabird species, and migratory whales are regular visitors (CALM, 1992; DPAW, 2016c).
		Social Values The marine park is popular for recreational water activities including boating, swimming, kayaking, snorkelling, whale watching, kite and windsurfing. Scuba diving and freediving is common at the Boyinaboat Reef which is located close to Hillary's Boat Harbour. Recreational fishing is permitted in most areas (DPAW, 2016c).
Swan Estuary Marine Park	Special Purpose and Nature Reserve Zones.	**Description** Three biologically important areas of Perth's Swan River make up the Swan Estuary Marine Park, including Alfred Cove, Pelican Point and Crawley. These three sites cover a total area of 3.4 km^2 (CALM, 1999).
		Ecological Values The sand flats, mud flats and beaches at the three locations of the Swan Estuary Marine Park provide the only remaining significant feeding and resting areas in the Swan Estuary for trans-equatorial migratory wading and waterbirds. This Marine Park and adjacent reserves also provide habitat for a diverse assemblage of aquatic and terrestrial flora and fauna (CALM, 1999).
		Social and Economic Values

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Nature-based wildlife tourism operates in the area and this Marine Park supports commercial net fishing. Recreational activities that occur within the area include fishing, bird watching, kayaking, windsurfing, boating, and sightseeing (DBCA, 2023).
		Cultural Values The Whadjuk people are the traditional owners of the land and waters of Swan Canning Estuary and have frequented the waters of this park for many years. The estuarine and terrestrial habitats provide a source of fish, shellfish, reptiles and birds for hunting (CALM, 1999; DBCA, 2023).
Shoalwater Islands Marine Park	Sanctuary, Special Purpose and General Use Zones.	**Description** The Shoalwater Islands Maine Park is located adjacent to Rockingham on the south-west coast of Western Australia, ~50 km south of Perth and covers an area of ~66 km^2 (DEC, 2007c).
		Ecological Values The Shoalwater Islands Marine Park consists of a complex seabed and coastal topography consisting of islands, limestone ridges and reef platforms, protected inshore areas and deeper basins, sandbars and beaches, and is home to five species of cetacean and 14 species of sea and shore bird. The waters of this Marine Park are also used to access feeding grounds for the little penguin (*Eudyptula minor*) colony on Penguin Island, which is close to the northernmost limit of the species' range and is the largest known breeding colony in Western Australia (DEC, 2007c). A recent study has also reported a recurrent aggregation of scalloped hammerheads (*Sphyrna lewini*) within this Marine Park (López et al., 2022).
		Social and Economic Values Commercial fisheries target a number of species within the area and this Marine Park also supports a mussel farming industry. Tourism is a popular activity within this Marine Park and includes water sports such as scuba diving, snorkelling, sailing, kayaking, kite surfing, and windsurfing. Recreational fishing is popular in this area and is likely to increase. The diversity of this Marine Park biota makes this Marine Park important for scientific research and education among tertiary institutions, schools and outdoors organisations (DEC, 2007c).
		Cultural Values This Marine Park is of cultural significance to the Gnaarla Karla Booja people who are the traditional owners and have frequented this Marine Park for thousands of years. The Gnaarla Karla Booja people have continued to use this Marine Park for fishing and hunting. Shoalwater and Garden Island areas are significant parts of the story of creation and there are a number of sites adjacent to and within this Marine Park that are registered as culturally significant (DEC, 2007c).
Ngari Capes Marine Park	Sanctuary, Special Purpose and Recreation Zones.	**Description** The Ngari Capes Marine Park is located off the south-west coast of Western Australia, ~250 km south of Perth, covering ~1238 km^2 (DEC, 2013).
		Ecological Values The Ngari Capes Marine Park consists of a complex arrangement of sandy bays, high energy limestone and granite reefs bordered by headlands and cliffs and two weathered capes. Coral

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		communities consist of both tropical and temperate species. Cetaceans and pinnipeds are resident in and/or transient through this Marine Park as well as a diverse range of seabirds and shorebirds (DEC, 2013).
		Social and Economic Values A diverse range of commercial fisheries and aquaculture occur within and around this Marine Park targeting species such as abalone, salmon, sharks, demersal finish, baitfish, and western rock lobster. This Marine Park offers a wide range of attractions for marine based tourism which include shore-based and boat-based whale watching tours and dive and snorkel tours. Recreational activities that occur within this Marine Park include diving, fishing, snorkelling and wildlife watching (DEC, 2013).
		Cultural Values The Pibelmen and Wardani people occupy the lands adjacent to this Marine Park and utilise the coastline for fishing, hunting, ceremonial activities and resource gathering as they have continued to do for thousands of years. At least 45 sites of Indigenous significance have been identified within or adjacent to this Marine Park. Many marine species including mammang borungar (whale) and kalda (sea mullet) are culturally significant to the Indigenous people of the southwest region (DEC, 2013).
Walpole and Nornalup Inlets Marine Park	Recreation Zone.	**Description** The Walpole and Nornalup Inlets Marine Park is located adjacent to the towns of Walpole and Nornalup on the south coast of Western Australia, ~120 km west of Albany, and covers ~14 km^2 (DEC, 2009a).
		Conservation Values The Walpole and Nornalup Inlets Marine Park consists of a geologically complex lagoonal estuarine system comprising three significant rivers and two connected inlets that are permanently open to the ocean. Approximately 40 marine and estuarine finfish species commonly inhabit the inlet system, as well as a variety of shark and ray species and numerous seabirds and shorebirds. The sandy beaches and shoreline vegetation of the inlet system are of high ecological and social importance to this Marine Park (DEC, 2009a).
		Social Values The diversity of wildlife and easily accessible terrestrial, estuarine, and coastal scenery has enhanced nature-based tourism within the area. Popular recreational activities that occur within this Marine Park include boating, fishing, swimming, hiking, bird watching, and wildlife watching (DEC, 2009a).
		Cultural Values Estuaries are significant hunting, fishing and gathering areas for Minang people of south-western Australia who have a strong spiritual connection to the area. Aboriginal artefact scatters and other listed areas of cultural significance have been found within and adjacent to this Marine Park (DEC, 2009a).

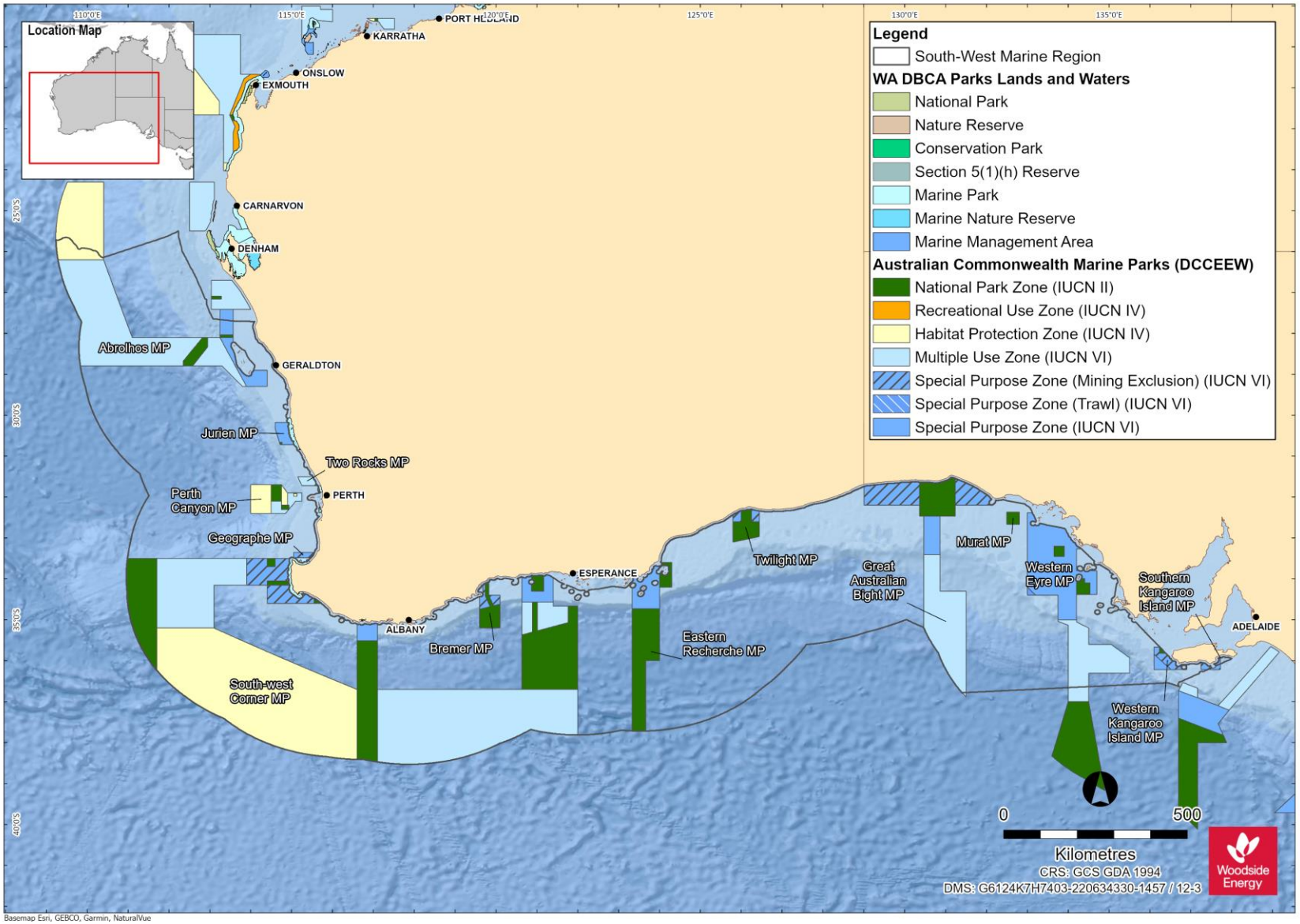


Figure 11-2 Commonwealth and State Marine Protected Areas for the SWMR (data source: GA, 2024)

11.11 Summary of Protected Areas within the NMR

Table 11-8 Protected Areas within the NMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
World Heritage Properties		
Kakadu National Park		**Description** Kakadu National Park is a living landscape with exceptional natural and cultural values. It is the largest National Park in Australia and preserves the greatest variety of ecosystems on the Australian continent including extensive areas of floodplains, mangroves, tidal mudflats, coastal areas and monsoon forests. The park was inscribed on the World Heritage list in three stages over 11 years. It is located in tropical north Australia covering a total area of 19,810 km^2 (Director of National Parks, 2016).
		Ecological Values The conservation values reflect the WHA Criterion: (i), (vi), (vii) and (ix): Natural features relate to Criterion (vii) – the remarkable contrast between the internationally recognised Ramsar-listed wetlands and the spectacular rocky escarpment and its outliers and Criterion (ix) – four major river systems of tropical Australia and floodplains that are dynamic environments, shaped by changing sea levels and big floods every wet season. These floodplains illustrate the ecological and geomorphological effects that have accompanied Holocene climate change and sea level rise. Kakadu National Park contains important and significant habitats supporting a diverse range of flora and fauna. Coastal areas of the park are dominated by mudflats which are mostly lined by mangroves which support breeding and nursery grounds for a variety of animals. The threatened flatback turtles nest on Field Island which is within the park. Kakadu National Park is a key habitat for threatened species including one species of river shark, two sawfish species and two inshore dolphin species (Director of National Parks, 2016).
		Social Values Kakadu National Park is a popular tourist destination which provides important economic value to the region through boat and fishing tours and wildlife tours. Commercial tours operate within the area which provides employment opportunities for local communities. Popular recreational activities within the park include bushwalking, camping, recreational fishing and boating, swimming, wildlife watching, and viewing culturally significant sites (Director of National Parks, 2016).
		Cultural Values The Bininj/Mungguy people are the traditional owners of Kakadu National Park and have had longstanding custodianship and spiritual connection with the Kakadu region and continue to use the park for cultural practices. Kakadu holds one of the world's greatest concentrations of rock art sites and there is thought to be up to 15,000 sites in total with some sites estimated to be over 20,000 years old (Director of National Parks, 2016).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
National Heritage Places–- Natural		
Kakadu National Park		Refer to World Heritage property description and values above
Commonwealth Heritage Places–- Natural		
N/A		
Wetlands of International Importance (Ramsar)		
Kakadu National Park		**Description** Australian Ramsar site number 2. The stage 1 and 2 Ramsar sites, established in 1980, 1985 and 1989, respectfully were combined into a single Ramsar site in 2010 (BMT WBM, 2010).
		Conservation Values The Kakadu National Park Ramsar site straddles the western edge of the Arnhem Land Plateau encompassing a range of landforms and extensive floodplains. It is a mosaic of contiguous wetlands comprising the catchments of two large river systems, the East and South Alligator rivers and encompasses extensive tidal mudflat areas. It is an internationally important site for migratory shorebirds as part of the EAAF (BMT WBM, 2010).
Cobourg Peninsula		**Description** Australian Ramsar site number 1 established in 1974. This Ramsar site includes freshwater and extensive intertidal areas but excludes subtidal areas. It is in a remote location and there has been minimal human impact on the site (BMT WBM, 2011).
		Conservation Values The wetlands encompassed in the Ramsar site are some of the better protected and near-natural wetlands in the bioregion and there is a diverse array of wetland in a confined area. The site supports important turtle nesting habitat and habitat for coastal dolphin species and is an internationally significant migratory shorebird habitat as part of the EAAF and an important location for seabird breeding colonies (BMT WBM, 2011).
Wetlands of National Importance (DAWE, 2019)		
Southern Gulf Aggregation		**Description** The site is a complex continuous wetland aggregation in the Gulf of Carpentaria, covering an area of ~5,460 km^2 located 58 km east of Burketown, Queensland (DCCEEW, 2019b).
		Conservation Values The Southern Gulf Aggregation is the largest continuous estuarine wetland aggregation of its type in northern Australia. It is one of the three most important areas for shorebirds in Australia. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Social Values The area is an important site for recreational barramundi fishing and is a popular site for ecotourism (DCCEEW, 2019b).
Territory Marine Parks and Reserves		
Cobourg Marine Park	II, IV, VI	**Description** Cobourg Marine Park covers an area of 2,290 km^2 and is located in the waters surrounding the Cobourg Peninsula ~220 km north-east of Darwin. This Marine Park is part of the larger Garig Gunak Barlu National Park. Garig Gunak Barlu National Park includes both this Marine Park and the Cobourg Sanctuary (Northern Territory Government, 2011)
		Conservation Values Cobourg Marine Park is located in the Cobourg and Van Diemen Gulf marine bioregions with the northern portion of the Marine Park covered by the Cobourg marine bioregion and the southern portion covered by the Van Diemen Gulf marine bioregion. This Marine Park is characterised by a number of deeply incised bays and estuaries on its northern shores. These bays are ancient river valleys that were drowned during periods of sea level rise and provide a varied environment and habitat that is quite distinct from the open water areas of the Marine Park. The areas of the Marine Park that have been studied and where extensive collections have been made indicates that the Marine Park supports rich and diverse marine life including live coral reefs, seagrass, diverse reef and pelagic fish populations, saltwater crocodiles, and six species of threatened marine turtles and dugong (Northern Territory Government, 2011).
		Social and Economic Values A variety of commercial fisheries, aquaculture and pearling occur within this Marine Park. The Marine Park has visitors who stay within the Cobourg sanctuary, sailors who moor in the area and guests who stay at onsite accommodation. Water sports such as fishing, boating, sailing, scuba diving, recreational fishing, sightseeing and wildlife viewing are popular activities undertaken in the Marine Park (Northern Territory Government, 2011).
		Cultural Values The Cobourg people have a longstanding connection to the lands and seas of Cobourg Marine Park. The Marine Park is a culturally significant place for the Cobourg people to practice customary activities including ceremonies and fishing and hunting of marine resources (Northern Territory Government, 2011).

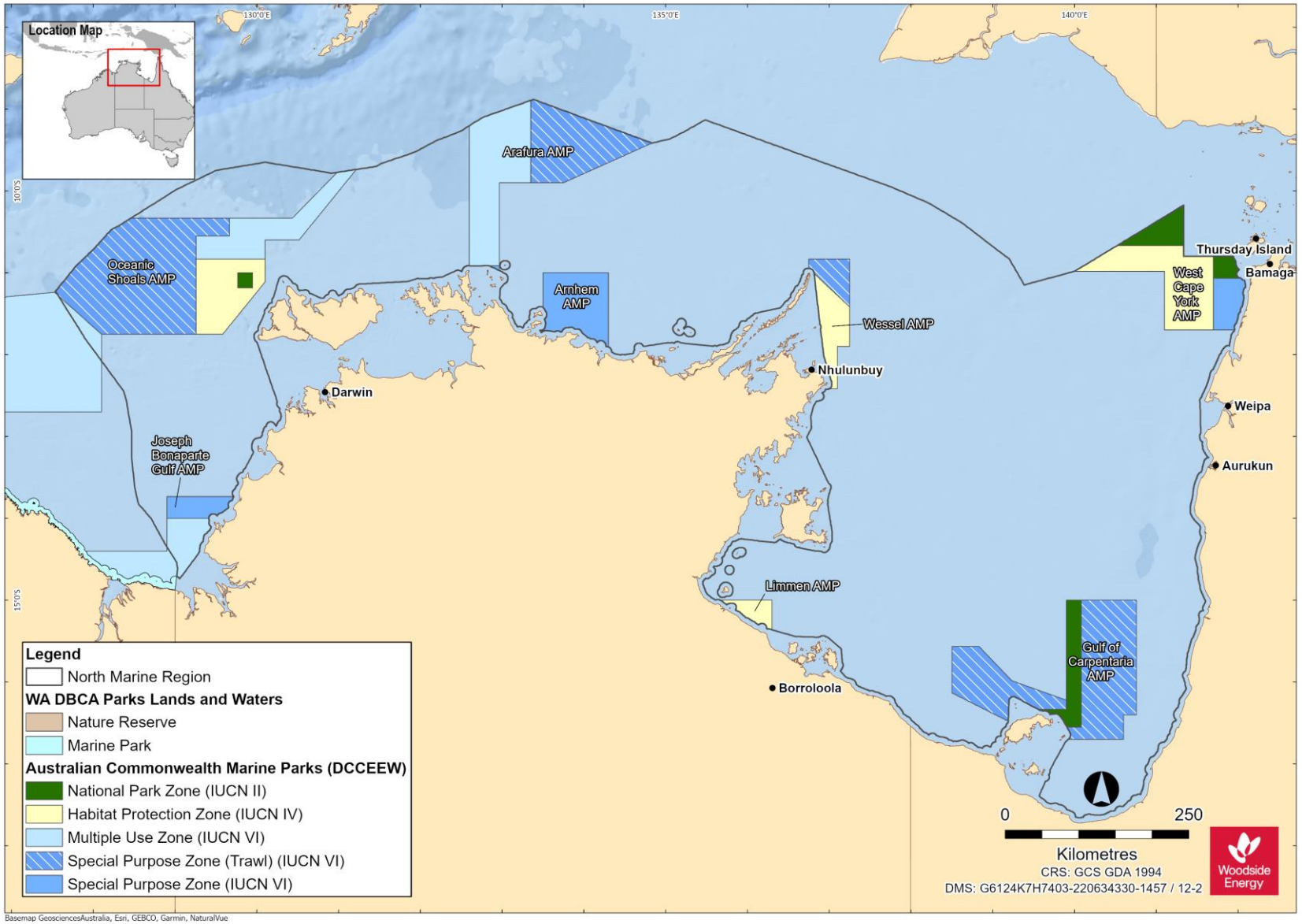


Figure 11-3 Commonwealth and State Marine Protected Areas within the NMR (data source: GA, 2024)

12. SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

This section summarises the information relating to the socio-economic and cultural environment of the regions offshore of Western Australia, with a focus on the NWMR and to a lesser extent the SWMR and NWR.

12.1 Cultural Values and Heritage

Woodside's approach to Cultural Values and Heritage management reflects our publicly available **First Nations Communities Policy** (Woodside 2022). This policy is underpinned by core principles that ensure our management of cultural heritage is thorough, transparent and supported by consultation and continued engagement with First Nations communities. Our approach to the identification, management and protection of cultural heritage is consistent with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), engaging with First Nations communities in ways that reflect the principles of seeking Free, Prior and Informed Consent (FPIC). Where heritage is concerned Woodside seeks to avoid impact, or if avoidance is not possible, to minimise and mitigate impact through consultation with relevant First Nations communities. We seek to ensure Traditional Owners and Custodians are central to heritage management so that cultural values are understood and remain protected.

Australia ICOMOS (International Council on Monuments and Sites) is a non-government peak body for cultural heritage professionals formed as a national committee for ICOMOS (international). Australia ICOMOS' mission is to lead cultural heritage conservation in Australia by issuing standards and practice notes. Woodside understands heritage value to mean the cultural significance of a place to an individual or group in line with the Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia ICOMOS 2013) (Burra Charter), and associated practice notes. A cultural feature, is therefore comparable to the Burra Charter term "fabric" and refers to a place's elements, fixtures, contents and objects which have cultural values. Although these features are necessarily physical, the place they inhabit or comprise may have tangible or intangible dimensions (Australia ICOMOS 2013).

12.1.1 Native Title

Woodside uses established systems, such as native title, to identify First Nations groups that may have functions, interests or activities that may be affected. While acknowledging that cultural features and heritage values may exist outside of the native title framework, native title claims, determinations and ILUAs are defined under the *Native Title Act 1993* (Cth). Woodside considers this to be the broadest extent over which First Nations groups have claimed native title rights and interests.

Native title claims are applications made to the Federal Court under the Native Title Act for a determination or decision about native title in a particular area. A claim is made by a native title claim group which asserts it holds native title rights and interests in an area of land and/or water, according to its traditional laws and customs. By making a claim, the native title claim group seeks a decision that native title exists so that its native title rights and interests are recognised by the common law of Australia. This is called a native title determination. A determination is a decision by a recognised body, such as the Federal Court or High Court of Australia, that native title either does or does not exist in relation to a particular area (Native Title Tribunal).

A requirement to establishing a positive determination of native title in court is proving that there is an organised society that occupied the land and/or waters at the time of British annexation. The requirement of an 'organised society' is set out by Justice Toohey in the historic judgment of Mabo v Queensland (No 2)) [1992] HCA 23; (1992) 175 CLR 1 ('Mabo'). Justice Toohey had the following to say (at 187):

it is inconceivable that indigenous inhabitants in occupation of land did not have a system by which land was utilized in a way determined by that society. There must, of course, be a society sufficiently organized to create and sustain rights and duties…

Therefore, Woodside understands that native title rights and interests are held communally by an organised society, that native title claims are understood to represent the area over which First Nations groups are claiming these rights and interests, and that native title determinations provide clarity on where native title rights and interests are found to either exist or not exist. Where native title rights or interests are determined to exist they will be held by a Registered Native Title Body Corporate (section 57, *Native Title Act 1993*) in trust or as agent for native title holders.

Indigenous Land Use Agreements (ILUAs) are voluntary agreements between native title parties and other people or bodies about the use and management of land and/or waters and are registered by the Native Title Registrar in the Register of ILUAs. An ILUA can be made over areas where:

- native title has been determined to exist in at least part of the area; or
- a native title claim has been made; or
- where no native title claim has been made.

While registered, ILUAs operate as a contract between the parties, including relevant native title holders (Native Title Tribunal).

The Native Title Act provides for a Representative Aboriginal/Torres Strait Islander Body (Native Title Representative Body) to be recognised by the Commonwealth Minister for an area. Native Title Representative Bodies have specialist functions set out in the Native Title Act within the area for which they are the Native Title Representative Body. However, the functions of a Native Title Representative Body are such that they do not hold details on the cultural features or heritage values of an area and therefore do not inform Woodside's understanding of heritage values or cultural features.

12.1.2 Coastal First Nations Groups

First Nations groups are keenly aware of the extent of their rights, interests and responsibilities for Country, and these are generally discrete, defined areas, including areas of sea (Smyth 2007). To identify cultural features and heritage values which may exist outside of native title claim, determination and ILUA areas, Woodside considers native title claims, determinations and ILUAs coastally adjacent to areas of operation to be an instructive means of identifying potentially relevant First Nations groups to be consulted.

Woodside understands from engagement with stakeholders that extending a native title group's responsibility to areas which those groups have elected to not include in their claims or ILUAs can have significant cultural consequences for groups and individuals. This may also, over time, build expectations in the broader community that a group is responsible for maintaining environmental values in areas for which they do not hold traditional knowledge.

Woodside acknowledges that a First Nations group's relative proximity to any Operational Areas is not necessarily a meaningful indicator of the connection to the area and providing advice over such areas can be culturally dangerous. As a result, caution must be used when conducting broader engagement.

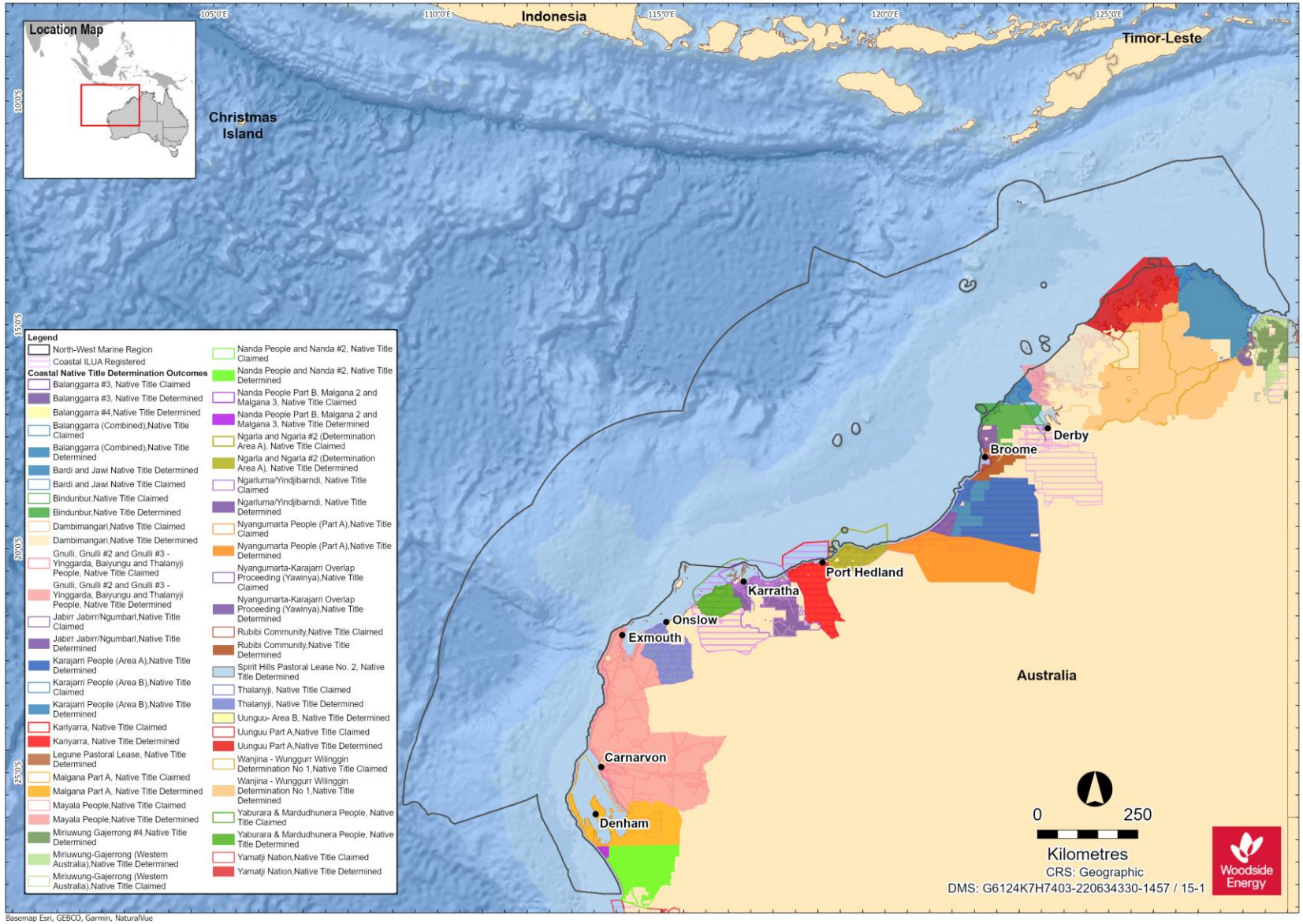


Figure 12-1 Coastal Native Title Claims/ Determinations and ILUAs in the NWMR (data source: DPLH 2024)

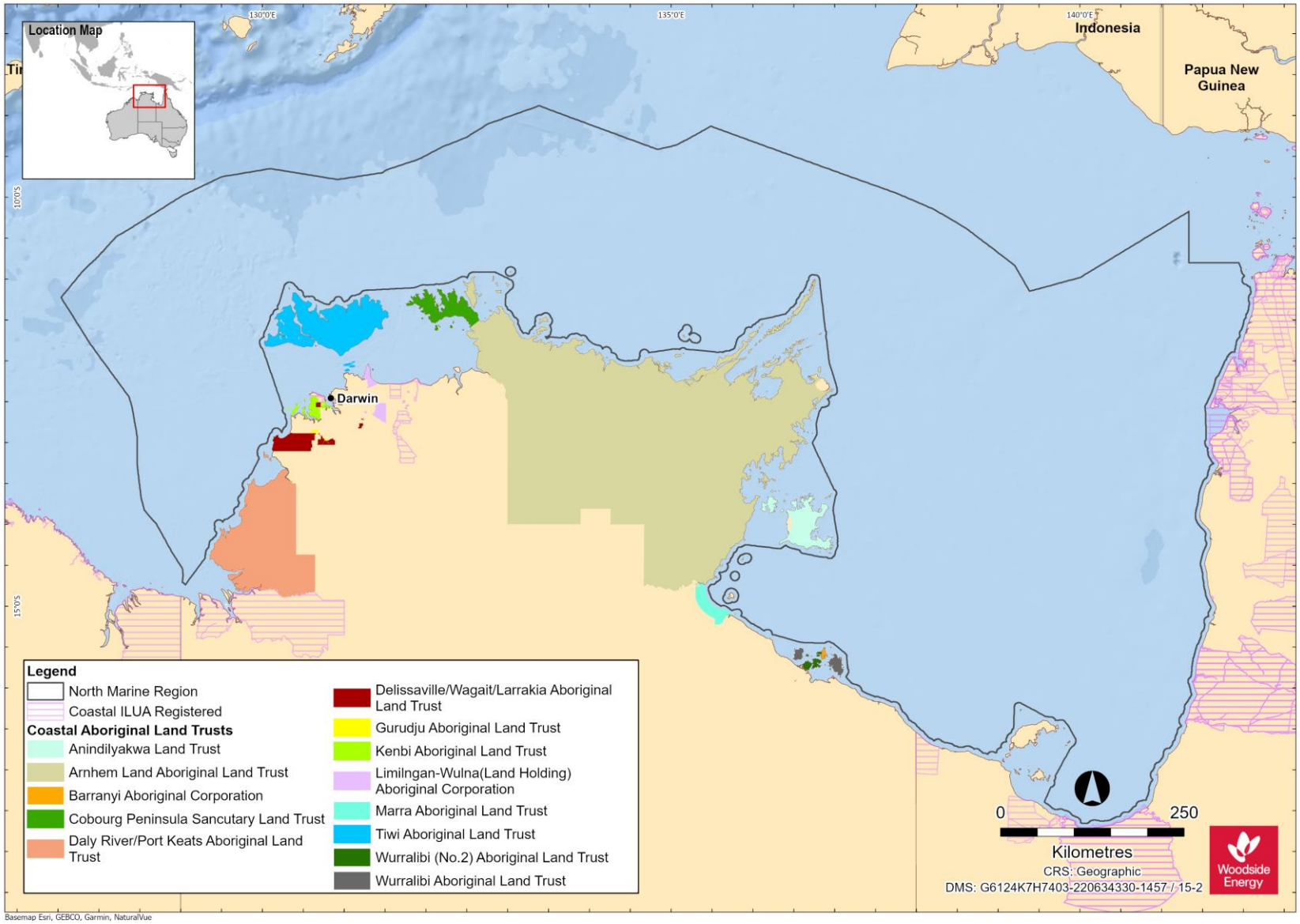


Figure 12-2 Coastal Native Title Claims/ Determinations and ILUAs in the NMR (data source: DPLH 2024)

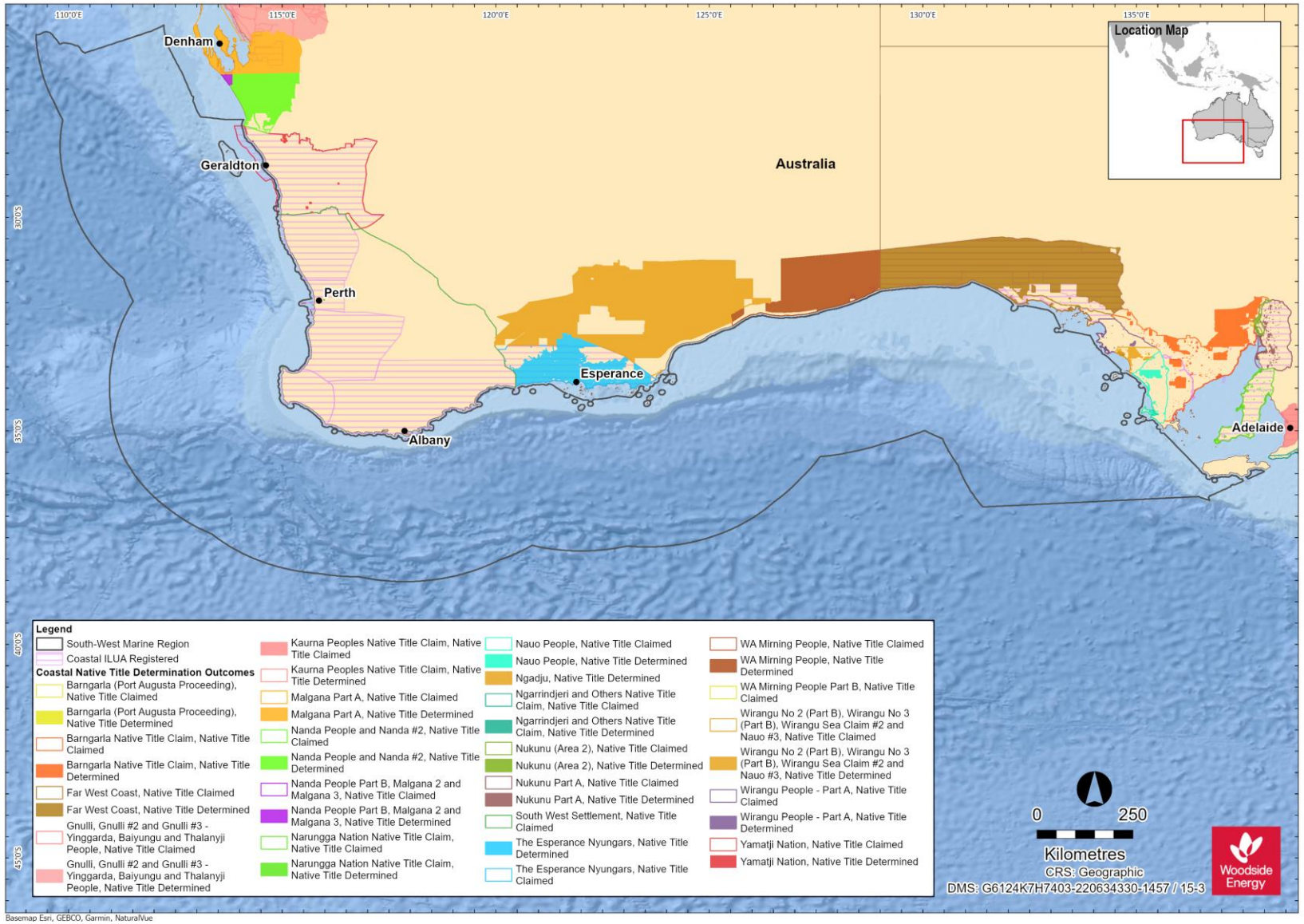


Figure 12-3 Coastal Native Title Claims/ Determinations and ILUAs in the SWMR (data source: DPLH 2024)

12.1.3 Sea Country

"Sea country is valued for Indigenous cultural identity, health and wellbeing" (DNP 2018a, 2018b).

Woodside recognises the potential for marine ecosystems to include cultural features as well as environmental values. This is one aspect of the broader concept of "Sea Country", which can be defined as the area of sea over which a First Nations group has interests, cultural value, connection and use. It has been noted that "the saltwater peoples of the north-west are associated with discrete clan estates or tribal areas, often referred to in contemporary Aboriginal English as 'Saltwater Country' or 'Sea Country'.

'Country' refers to more than just a geographical area: it is shorthand for all the values, places, resources, stories and cultural obligations associated with that geographical area." (Smyth 2007).

It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country—the seascape which Traditional Custodians view, interact with or hold knowledge of. The link between environmental protection and cultural heritage protection is illustrated in the Australian Government's Indigenous Protected Areas Program. The Indigenous Protected Areas program provides for "areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation…IPAs deliver environmental benefits…Managing IPAs also helps Indigenous communities protect the cultural values of their country for future generations…" (DCCEEW, 2024c).

McNiven (2004) suggests that "For those mainland groups whose exploitation of the sea was limited to littoral resources, it is likely that seascapes extended no more than c. 20–30km out to sea, out to the horizon and the limit of human visibility. ... However, in some coastal places, clouds that can be seen well over 100km out to sea are imbued with spiritual significance. For those groups with elaborate canoe technology, seascapes extend well over the horizon." While there is some evidence of traditional watercraft in Australia's North West, the recorded evidence is limited to travel across inland rivers (e.g. Barber and Jackson 2011) or travel between coastal islands (Paterson et al 2019).

Cultural features of coastal areas may include marine species that may travel many thousands of kilometres through areas with similar cultural values to multiple Indigenous language groups. Some species may travel as far as 5,000 km from Antarctica to the Kimberley region of Western Australia (Double et al., 2010, 2012), passing First Nations language groups along the entire west coast of Australia.

Table 12-1 Commonly identified Sea Country species and habitats.

Value	Details
Marine mammals	Whales, and in particular humpback whales and dugongs, are commonly identified through consultation with First Nations people as culturally important species, with totemic importance. Common interests include maintaining their populations, biodiversity, and migration patterns.
Marine reptiles	Turtles and sea snakes are commonly identified through consultation with First Nations people as culturally important species and a favoured resource. First Nations people that identify marine reptiles as species of totemic importance or integral to songlines may place high cultural value on their protection. Cultural knowledge of turtles at a population level (turtle migration, behaviour and the related marine environment) may all be important in ensuring the continuation of cultural functions and activities that remain valuable to First Nations people (Fijn 2021:47; Delisle et al. 2018).
Fish and Cephalopods	Fish and squid are commonly identified through consultation with First Nations people as a culturally important species, with fish generally being identified as a resource. First Nations may identify cultural values associated with fish species as important to maintaining both tangible (physical cultural sites) and intangible (cultural knowledge) cultural heritage. Tangible cultural heritage associated with fish can include important cultural sites such as midden sites, fish traps and thalu sites. There are increase ceremonies/rituals for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed.

Seabirds	Seabirds, and in particular shags, are commonly identified through literature as a culturally significant species (Malgana Land and Sea Management et al. (2021), as well as a resource (seabird eggs; Smyth 2007).
Benthic habitats	First Nations groups identify benthic habitats as valuable for both their ecological and aesthetic values. Corals attract fish and seagrass providing shelters for fauna, as well as an important resource for dugongs.
Shoreline habitats	First Nations groups identify shoreline habitats as valuable for their ecological values, including mangroves for providing shelter to marine invertebrates, which are identified resources, and potential nursery for turtles. Literature also notes that mangroves are also valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002) and Smyth (2007) reports that mangrove seeds are used as a resource by Ngarda-Ngarli.

12.1.4 Marine Parks

Woodside acknowledges that Commonwealth and State Marine Park Management Plans have sought to recognise cultural values and responsibilities of First Nations groups. Australian Marine Parks (AMP) describe this framework in the following way: 'when making decisions about what can occur in marine parks and what action we will take to protect AMPs, we take values into account'. AMP summarises these values as natural values, cultural values, heritage values and socio-economic values (**Refer to section 11.5**).

12.1.5 Indigenous Protected Areas

Indigenous Protected Areas (IPAs) are areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. IPAs are an essential component of Australia's National Reserve System, which is the network of formally recognised parks, reserves and protected areas across Australia. There are currently 85 dedicated IPAs over 74 million hectares. These account for more than 50 per cent of the National Reserve System (NIAA, 2023). As of August 2024, an additional 36 Traditional Owner consultation projects to develop management plans for proposed IPAs are underway (DCCEEW, 2024c). Ten Sea Country IPA consultation projects were announced in 2022. One of these, Tukujana pa Karajarri Kura Jurrar, is in the NWMR and extends from the existing Karajarri IPA into the sea off the south-west Kimberley coast (DCCEEW, 2024c). The Indigenous Protected Areas program is administered by the National Indigenous Australians Agency in partnership with DCCEEW. Dedicated and proposed IPAs are shown in **Figure 12-12-4**.

The following IPAs are within the NWMR:

Nyangumarta Warrarn IPA

The Nyangumarta Warrarn IPA is comprised of four areas totalling approximately 28,675 km^2, including parts of The Great Sandy Desert, Walyarta Conservation Reserve, Kujungurru Warrarn Conservation Reserve Area and the Eighty Mile Beach Marine Park Intertidal Area. The traditional owners of the designated IPA self-identify as and are identified by other Pilbara First Nations people as Nyangumarta people. Nyangumarta people are the native title holders of the land and waters.

Ecological values in the IPA include a complex wetland system associated with Mandora Marsh, known to Nyangumarta people as Nyamaring. Walyarta (or Salt Creek). The Mandora Marsh area holds the most inland distribution of mangroves in Australia and the mound springs associated with Mandora Marsh area, such as Yalayala (Eil Eil), are recognised as important bird nesting sites (NWAC & YMAC, 2015).

Karajarri IPA

Karajarri Indigenous Protected Area (IPA) was dedicated in 2014, to manage, protect and enhance Karajarri country. The IPA covers nearly 25,000 km^2 of land in the southern Kimberley, including 130 km of coastline stretching from Gordon Bay to Cape Missiessy. It comprises extensive coastlines,

tidal creeks and wetlands as well as arid country that stretches into the Great Sandy Desert (NIAA, n.d.).

Karajarri people want to ensure areas of cultural and natural significance are looked after correctly according to their own protocols, and they view their environmental responsibilities as Palanapayana Tukjana Ngurra meaning “everybody looking after country properly” (KTLA, 2014a).

The IPA includes two different zoning categories to help manage country: IUCN Category 2 (National Park) and Category 6 (Protected area with sustainable use of resources). The category 2 zoning allows for the area to become part of an integrated system of protected areas with Eighty-mile beach to the south and Roebuck Bay to the north of the IPA (KTLA, 2014a).

To assist in the planning and development of the IPA, the Karajarri Traditional Lands Association (KTLA) developed a Healthy Country Plan, which provides direction for addressing threats and for working on priorities for land and cultural site management (KTLA, 2014b).

The Tukujana pa Karajarri Kura Jurrar IPA has been announced under the Sea Country IPA Program, extending from the existing Karajarri IPA into the sea off the south-west Kimberley coast (DCCEEW, 2023b). The area includes a network of coastal habitats, such as intertidal and subtidal reefs, mangrove systems, lagoons and tidal creeks, and connects the Ramsar sites of Roebuck Bay and Eighty-mile Beach (DCCEEW, 2023b).

Yawuru IPA

The Yawuru IPA was dedicated by Yawuru people in 2017, covering 2,109 km^2 of Yawuru coastal and inland country (YRNTBC, 2014). The Yawuru people are the Native Title holders of their land and sea–- their ancestors have lived along the foreshores of Roebuck Bay, across the Pindan Plains and inland along the fringes of the Great Sandy Desert for thousands of years (NIAA, n.d.-a).

The Yawuru IPA is managed under the Walyjalajala nagulagabu birrangun buru Plan of Management for 2017-2026 (YRNTBC, 2014). The plan includes eight targets for management:

- Yawuru cultural knowledge and practice,
- Yawuru significant areas,
- Yawuru rights and responsibilities,
- Niyamarri- sand dunes,
- Bilarra- wetlands,
- Birra- bush and pindan country,
- Nagulagun- saltwater country (deep water and intertidal),
- seasonal resources and biodiversity.

Cultural values include Yawuru named sites, tracks and areas, historical sites associated with pearling and pastoral industries, archaeological sites and traditional bush/ sea resources. Ecological values include reefs and seagrass beds that provide habitat for dugongs (*Dugong dugon*) and EPBC Act-listed threatened sea turtle species including Hawksbill Turtle (*Eretmochelys imbricata*), Loggerhead Turtle (*Caretta caretta*), Green Turtle (*Chelonia mydas*) and Flatback Turtle (*Nataden depressus*). Roebuck Bay is a Ramsar site and has a known population of snubfin dolphins (*Orcaella heinsohni*) (**Figure 7-6** Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)). Other ecological values include pearl shell beds for pearl oysters and habitat for a range of EPBC Act listed threatened species (YRNTBC, 2014).

Bardi Jawi IPA

Bardi Jawi IPA is located 160 km north of Broome and covers 1269.9 km^2 of land and sea country (NIAA, n.d.-b). The main communities on Bardi country are Djarindjin, Lombadina and Ardyaloon (One Arm Point). Bardi people live on the mainland of the Dampier Peninsula and islands immediately offshore from Ardyaloon. Jawi people call the islands further east, including Iwany (Sunday Island), their traditional country. Today people live in outstations spread along the mainland Peninsula coastline (KLC/ BJNAC RNTBC, 2013).

During the IPA consultation process, The Bardi Jawi rangers guided meetings with individual family groups to identify what they considered important to look after. An IPA steering committee was formed, who contributed cultural knowledge to the Bardi Jawi Indigenous Protected Area Management Plan (2013-2023). They were assisted by The Nature Conservancy in Conservation Action Planning (CAP). This plan highlights targets to be protected on country:

- Marnany (fringing reefs),
- aarli (fish),
- odorr (dugong) and goorlil (turtle),
- significant sites, language, law and culture,
- traditional oola (water) places,
- indigenous plant resources (KLC/ BJNAC RNTBC, 2013).

Jardagarr (coastal country) is classed under IUCN Category 4, and Niimidiman (inland country) is classed under Category 6. Niimidiman harbours many plant and animal species of high cultural value. For example, Irrgil trees are used for making boomerangs and Marrga, Joolgirr and Bilimangard trees are used for making shields. Some Niimidiman areas feature traditional Oola (water) places and stories attached to these places are culturally important. Ecological values of the Jardagarr (coastal) country includes many species of native native garrabal (birds), including Eastern Curlews and Fork-tailed Swifts (KLC/ BJNAC RNTBC, 2013).

Dambimangari IPA

Dambimangari IPA is located between Broome and Darwin, stretching east to the Prince Regent area. It covers 6,422.94 km^2 of landscape, including open grasslands, eucalyptus woodlands, intertidal flats and rocky reefs and shoals (NIAA, n.d.-c). Dambimangari is the traditional home of the Worrarra people. Dambimangari peoples' identity is interwoven with the sea and its reefs and islands. Reefs are important hunting grounds for jaya (saltwater fish) and warliny (dugong).

The targets for protection are identified in the Dambimangari Healthy Country Plan 2012-2022 as following:

- cultural sites
- reefs, beaches and islands
- saltwater fish
- turtle and dugong
- whales and dolphins
- rivers, waterholes, waterfalls and wetlands (freshwater systems)
- culturally important native animals
- bush fruits and medicine plants
- right-way fire (DAC, 2012).

Jurluwarra (Saltwater-turtle) and warliny (Dugong) are culturally important to Dambimangari people as a food source. Cultural sites include rock art sites, stone arrangements, burial sites and important camping beaches that were used for resting when travelling through saltwater country (DAC, 2012).

Uunguu IPA

Stage one of the Uunguu IPA was declared on May 23, 2011, coinciding with the Native Title Determination and release of the Healthy Country Plan. The IPA covers 7,598.06 km^2. It has been home to the Wunambal Gaambera people for many thousands of years and is part of the Wanjina Wunggurr culture. Wunambal Gaambera people call their country Uunguu – 'our living home'. Two of the reserves extend to the low water mark at Bougainville Peninsula, Vansittart Bay, Anjo Peninsula, Napier Broome Bay and islands in Rothsay Water (WGAC, 2017). A Saltwater IPA Plan of Management was created in 2017 as a sub-plan for the Wunambal Gaambera Healthy Country Plan (WGAC, 2017)[22].

[22] Marine areas were proposed to be added to the Uunguu IPA as an International Union for Conservation of Nature (IUCN) Category VI (Managed Resource) Protected Area, early in 2018.

Ten targets identified in the Wunambal Gaambera Healthy Country Plan are:

- Wanjina Wunggurr Law – our culture,
- right way fire,
- aamba (kangaroos and wallabies) and other meat foods,
- Wulo (rainforest),
- Yawal (waterholes),
- bush plants,
- rock art,
- cultural places on islands,
- fish and other seafoods,
- mangguru (marine turtles) and balguja (dugong) (WGAC, 2010).

The Uunguu Rangers look after land and sea country through pest control, visitor management, cultural heritage conservation, monitoring flora and fauna and fire management (NIAA, n.d.-c).

Balanggarra IPA

The Balanggarra IPA was dedicated on August 7, 2013. The IPA spans over 1 million hectares of land and sea country in the Kimberley region and has been home to the Balanggarra people for thousands of years. The five big rivers of the north Kimberley intersect on Balanggarra country. These rivers include the King River, Forest River, Pentecost River, Durack River and Ord River. The region also borders the Cambridge Gulf and Timor Sea. Three species of vulnerable sawfish are found in the waters of this region (Kimberley Land Council, n.d).

Nine targets identified in the Balanggarra Healthy Country Plan 2012–- 2022 are:

- Balanggarra law and culture,
- Our gra or country (land, sea, rivers, islands),
- Cultural sites (rock art sites, burial sites, heritage places),
- Native animals,
- Accessible bush tucker / medicine plants,
- Right way fire,
- Freshwater (places and freshwater fish),
- Saltwater fish and seafood,
- Migratory saltwater species (turtle, dugong, whales, dolphins).

The Balanggarra Rangers manage 1,000 km of river and sea frontage on their country to manage and protect and enhance the unique biodiversity values of their country (Balanggarra Aboriginal Corporation, 2011).

Wilinggin IPA

The Wilinggin IPA spans over 2.4 million hectares of remote country in the central north Kimberley region and was declared in 2013. It included basalt ranges and sandstone cliffs which rise 250 m high. The area has wooded grasslands, pockets of rainforest, extensive mangrove systems, tidal mudflats, rivers, creeks and billabongs. The Ngarinyin people are the traditional owners of this area and have lived on Wilinggin country for thousands of years (NIAA, n.d-d). Wilinggin Country is mostly landlocked, apart from two small saltwater areas which include Walcott Inlet and Prince Frederick Harbour.

Seven targets are identified in the Wilinggin Healthy Country Plan 2023 – 2032.

- Becoming strong on country
- Food and medicine plants
- Bushfire
- Law and culture sites
- Law and culture
- Freshwater places
- Wildlife and bush meats

The Wunggurr Rangers are caretakers of the unique natural and cultural values of Wilinggin country (Wilinggin Aboriginal Corporation, 2022).

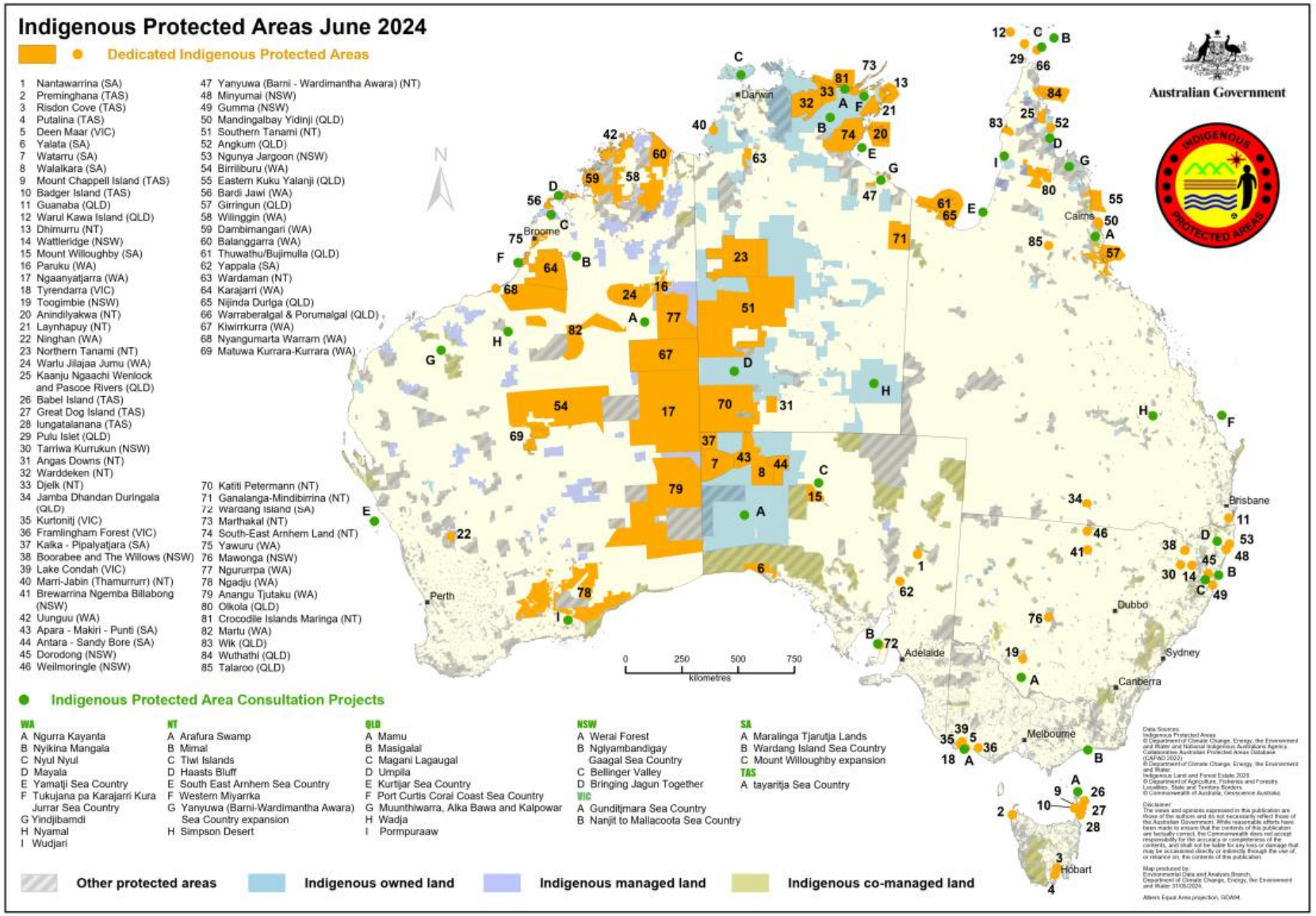


Figure 12-12-4 Indigenous Protected Areas (IPAs) in Australia (data source: DCCEEW & NIAA, 2024)

12.1.6 First Nations Cultural Heritage

Woodside understands that communal cultural connection exist between Traditional Custodians and land and waters. It is understood from the onshore archaeological record that First Nations people have occupied the Australian continent for at least 65,000 years (Clarkson et al 2017) and in many places maintain a strong continuing connection that is said to extend back in Indigenous cosmology to the beginning of time.

Archaeological sites identified onshore with the potential to exist in intertidal or submerged locations include petroglyphs, fish traps and artefact scatters or burials contained within sand dunes. As archaeological sites, these features have archaeological value which relates to the preservation of their fabric (i.e. the tangible features) and their context (i.e. their location and relationship to other archaeological and natural features). Archaeological sites may also have intangible dimensions (ICOMOS, 2013) cultural value that exist in addition to their archaeological or scientific value.

Intangible values are a living expression of cultural heritage that is prevalent across generations. These values can be traditional, and they can also be new and living at the same time. An understanding of the intangible cultural heritage of different First Nations communities helps with intercultural dialogue and encourages mutual respect (UNESCO, 2011). Intangible cultural heritage is safeguarded through practicing and passing on knowledge or expressions by the people to whom it belongs to (NNTC, n.d). **Figure 12-2** provides context to common intangible themes that exist in First Nations communities.

Table 12-2 Intangible Heritage Values associated with Sea Country

Value	Details
Songlines	Oral songlines are often described by First Nations people as the law of the land and make up part of the Dreaming (Neale and Kelly 2020:30). Songlines are viewed in Western academia as a framework for relating people to land and consist of a series of invisible, interconnected routes across the landscape that mark significant sites for First Nations people (Higgins 2021:723). Songlines demonstrate First Nations peoples' strong connections to land by revealing sacred knowledge that is place-specific (Roberts 2023:5). The land's physical features are instrumental in maintaining songlines because this is how ancestral spirits journeyed through, and interacted with, the physical landscape leaving sacred knowledge behind. The interconnection between the physical and spiritual is where songlines become intrinsically tied to significant places across Country. As a result, geographical landforms are recorded within songlines and become sacred places. Such landforms can include inter alia: rocks, mountains, rivers, caves and hills (Higgins 2021:724). Songlines can become lost, fragmented or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. In Australia, songlines can stretch thousands of kilometres, making up a complex and organic network of stories containing cultural knowledge of First Nations communities across the land (Neale and Kelly 2020:35). Songlines can also extend out to Sea Country and contain cultural knowledge that is tied to geographic features, atmospheric phenomena and marine plants and animals. Often songlines containing references to a seascape or Sea Country make mention of mythical events occurring around marine life, fishing areas, submerged rocks or coral. Songlines that embody seascapes can reflect how a group may relate to, or value, Sea Country—for example connections to nearby islands that they once inhabited in their songlines (Smyth and Isherwood 2016:307). Songlines can also be used as proof of long-standing connection to land and support a legal entitlement to land rights (Higgins 2021:74). Examples where songlines contain strong references to Sea Country are more common in Pacific Islander and Torres Strait Islander communities, who often refer to seascapes and skylines in their songlines in order to communicate sacred knowledge that assists in safe navigation of the ocean (Neale and Kelly 2020:83-84).
Creation/dreaming sites, sacred sites and ancestral beings	The only published sources located by Woodside with detailed descriptions of the location of ancestral beings or creation/dreaming/sacred sites place these on land, or within inland water sources such as rivers or pools. However, some ancestral beings are noted to live within or originate from the sea generally, and some creation stories talk to the creation of features from

	or in the sea. Additionally, every place on shore or at sea must be assumed to have been created on some level in First Nations cosmology.
Cultural obligations to care for Country	Caring for Country collectively refers to the cultural obligations of individuals and groups, as well as rituals and ceremonies required for the physical and spiritual health of the environment. In the literature reviewed by Woodside, caring for Country was noted to include, but is not limited to, maintenance of the physical environment and ecosystem. It may also have cultural, spiritual and ritual dimensions such as caring for ancestral beings or ensuring cultural safety. Thalu are places where what are known as “increase ceremonies” are performed to enhance or maintain populations of plants, animals or phenomena. All mentions of active ceremonial sites were confined to onshore locations, though the values may extend offshore where e.g., a thalu relates to marine species populations.
Knowledge of Country/customary law and transfer of knowledge	Knowledge of and familiarity with the features of Sea Country is itself a value. The inherent potential for restricted or secret knowledge makes this difficult to assess even through consultation with Traditional Custodians. However, aspects such as limitations on access to sites or disruption/relocation of First Nations communities may have implications for the preservation of First Nations knowledge. Further, connection to Country may be damaged where people are displaced or disrupted (e.g., during colonisation) or where there is a loss of technical skills or environmental knowledge (McDonald and Phillips, 2021). Transfer of knowledge includes continuing traditional practices to pass on practical skills. This transfer of knowledge may be integral to managing a group’s intangible cultural heritage (UNESCO 2003).
Connection to Country	Describes the multi-faceted relationship between First Nations people and the landscape, which is envisioned as having personhood and spirit. It is also an aspect of personal identity for many First Nations people. In the case of Sea Country this can mean identifying as a Saltwater person, where “essence of being a 'Saltwater' person is ontological… it is about how people relate spiritually to the sea and engage with spiritual forces that created it, the marine flora and fauna and people” (McDonald and Phillips, 2021).
Access to Country, including Sea Country	Access is necessary for the continuation of other values including caring for Country, carrying out cultural practices and the transfer of traditional knowledge. Being on Country can be an important way of expressing or maintaining connection to Country (Australian Indigenous HealthInfoNet n.d.). Access is also a value in its own right, as a continuation of traditional Sea Country access and use.
Kinship systems and totemic species	Individuals may have kinship to specific species (Smyth 2008, Juluwarlu 2004) and/or a responsibility to care for species (Muller 2008). Kinship arises from totemic associations within First Nations “skin group” systems. It is forbidden for an individual to kill or eat a species who is from the same “skin group” (Juluwarlu 2004). They may also have certain obligations linked to the discussion of caring for Country above. It is assumed that marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood that these relationships do not prohibit people outside of that “skin group” from hunting or eating that same species (Juluwarlu 2004).
Resource collection	A number of marine species are identified through consultation and literature as important resources, particularly as food sources **(See Section 12.1.4)**. In addition to their immediate value as sustenance, the gathering and preparation of these resources is informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations.

On 15 November 2023, the *Aboriginal Heritage Act 1972* (WA) was restored as the legislation that manages Aboriginal heritage in Western Australia (DPLH, 2024). Under section 17 of that Act it is an offence to excavate, destroy, damage, conceal or alter any Aboriginal site without authorisation. Where there is a risk of injury or desecration to a significant Aboriginal area, even where permitted under the AHA, any Aboriginal person may apply to the federal Environment Minister for a declaration under sections 9 or 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* for the protection and preservation of that area.

12.1.6.1 Submerged Cultural Heritage

It is understood that the sea level has risen significantly during the 65,000 years of Indigenous occupation, and areas that were once inhabited are now submerged on the continental shelf (Veth

et al 2019; UWA 2021). At its lowest level during Indigenous occupation, the sea level was between 125 m (O'Leary et al 2020, Veth et al 2019, Williams et al 2018) and 130 m below current levels (Benjamin et al 2020, Benjamin et al 2023, UWA 2021).

Archaeological material preserved on the Ancient Landscape has the potential to provide further information about the earliest periods of human occupation (Veth et al 2019; UWA 2021).

Recent archaeological discoveries demonstrate that the now submerged landscape was occupied and inhabited, and can retain archaeological material from this time (Benjamin et al, 2020, Benjamin et al 2023; see Ward et al 2022 for an opposing view).

Certain landscapes have been identified as archaeologically prospective on the submerged Ancient Landscape, including:

- submerged water sources (rivers, waterholes, tidal channels and seeps) which have an increased likelihood of use or habitation as past generations used the associated resources (UWA 2021);
- submerged calcarenite ridges younger than human occupation of the continent which may have formed over and protected artefacts in-situ (Veth 2019);
- prominent landscape features (e.g. hills, particularly of igneous rock formations) that may have been foci for cultural activity (UWA 2021);
- karst depressions and other "catch points" where artefacts may accumulate following disturbances caused by inundation (UWA 2021, Nutley 2022, Nutley 2023a);
- Madeleine Shoals has been specifically identified by Murujuga Aboriginal Corporation (MAC) as an archaeologically prospective featuredue to its igneous rock formations which have the potential to contain petroglyphs.

The sites considered most likely to survive inundation, based on the review of existing literature, were logically the more robust forms including:

- midden and artefacts within cemented dunes, relict water holes, and beach rock deposits;
- quarry outcrops, extraction pits, and associated reduction debris in fine-grained volcanic outcrops;
- curvilinear stone structures and standing stones sitting on volcanic pavements and jammed into volcanic rock piles;
- lag deposits of artefacts and possibly midden on hardpan in suitable landscape contexts with good preservation conditions (e.g. shallow declination shorelines in sheltered passages of the inner archipelago or on the leeward side of hard-rock/fringing reef cause-ways adjacent to the outer islands);
- small overhangs and shelters with preserved deposits, facing away from the dominant wave and wind action. (Veth et al., 2019).

In recognition of this, Woodside considers the Ancient Landscape between the mainland and the ancient coastline KEF as an area where potential First Nations archaeological material may exist on the seabed, as this covers the full extent of this possible occupation. Known places including archaeological sites may be protected subject to declarations under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, *Underwate*r *Cultural Heritage Act 2018* or EPBC Act. However, these Acts only extend protection to First Nations heritage places specified by declaration or otherwise included on a statutory list. Woodside understands that there is currently no First Nations archaeology known to exist anywhere within Commonwealth waters and no areas subject to declarations or prescriptions under these Acts.

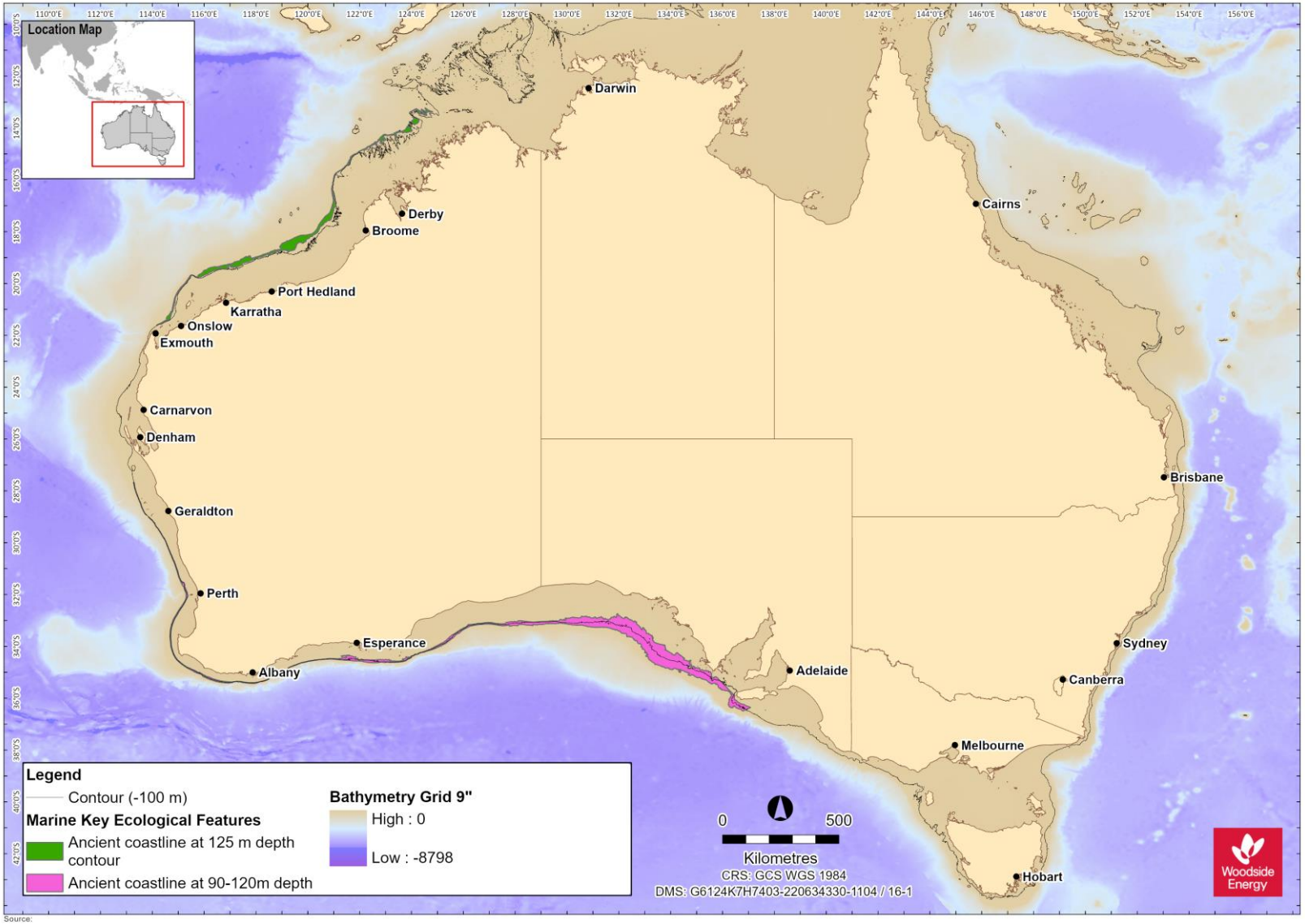


Figure 12-5 Indicative Bathymetry of the Ancient Submerged Landscape (data source: GA 2024, DCCEEW, 2024d)

12.1.6.2 First Nations Sites of Significance

Murujuga (the Burrup Peninsula) has a very high density of significant Indigenous heritage sites and places with tangible and intangible heritage values. The area has one of the largest, densest, and most diverse collections of rock art in the world. It is estimated that the peninsula and surrounding islands contain over a million petroglyphs (rock engravings) covering a broad range of styles and subjects. The landscape also contains quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, grinding patches and stone arrangements that evidence tens of thousands of years of human occupation. These places are linked to First Nations cosmology, Dreaming stories and songs through the stories, knowledge and customs that are still held by traditional custodians.

In 2007 the Dampier Archipelago (including the Burrup Peninsula) was included on the National Heritage List due to outstanding heritage values relating to Australia's cultural history contained in the large number, density, diversity, distribution and fine execution of rock art. Within the National Heritage Place, the Murujuga National Park covers 4,913 ha and is co-managed by the Murujuga Aboriginal Corporation and the Department of Biodiversity, Conservation and Attractions. The Murujuga Cultural Landscape was also added to Australia's Tentative World Heritage List in 2020, with full World Heritage Listing anticipated in 2024.

The Department of Planning, Lands and Heritage maintains a register of registered sites and heritage places. There are over 1,600 registered sites on Murujuga and the Dampier Archipelago with around 1,100 other heritage places. This register is not comprehensive and will be complemented by heritage surveys where necessary. Protection of National and World Heritage values is also legislated through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Murujuga National Park is managed under the *Conservation and Land Management Act 1984* (WA).

12.1.7 Historic Sites of Significance

Places of historic cultural significance are protected under Commonwealth, State and local regimes. Places inscribed on the National or World Heritage list are protected through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Historic places may also be protected under the *Heritage Act 2018* (WA); under section 129 of this Act the prohibited alteration, demolition, damage, despoilment or removal of objects from a registered place may result in a fine of A$1 million. Protection of heritage by local government typically emanates from local planning schemes produced under Part 5 of the *Planning and Development Act 2005* (WA).

Historical sites of significance and heritage value are found along adjacent foreshores of the SWMR, NWMR and NWR.

12.1.8 Historic Underwater Heritage

The remains of vessels and aircraft in Commonwealth waters, along with any associated article, are automatically protected under the *Underwater Cultural Heritage Act 2018* (Cth) after 75 years. This is applicable whether the existence or location of the article is known or unknown, as per section 16 of the Act. Other articles of underwater cultural heritage may be declared for protection as outlined in section 17 of the Act. Remains and relics of any ship lost, wrecked or abandoned in Western Australian waters before 1900 are protected by the *Maritime Archaeology Act 1973* (WA).

There are no known National Heritage listed shipwrecks in the NWMR and NMR (**Table 12-3** and **Table 12-4)**. The only known National heritage listed shipwrecks are within the SWMR and include:

- The HMAS Sydney II
- The HSK Kormoran
- The Batavia

Information on National Heritage listed shipwrecks in the SWMR can be found in **Table 12-5**.

Known historical shipwreck sites in Western Australian waters are listed in the WA Maritime Museum Shipwreck Database. Known historical shipwreck sites in Commonwealth waters are listed in Australasian Underwater Cultural Heritage Database. These databases only cover known historical sites. Known shipwrecks listed in these databases for the NWMR, NMR and SWMR are shown in **Figure 12-6**, **Figure 12-7**, and **Figure 12-8** respectively.

12.1.9 World, National and Commonwealth Listed Heritage Places

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects the heritage values of National Heritage Listed and World Heritage Listed places. Any action that will have or is likely to have a significant impact on the heritage values of these places are offences under Part 3, Division 1 of the EPBC Act unless the action is permitted under one of the mechanisms of the EPBC Act. These mechanisms include a number of exceptions set out in Part 4, approvals granted under Part 9 and ministerial decisions under Division 2 Part 7.

Australia's National Heritage Sites are those of outstanding natural, historic and/or Indigenous significance to Australia. Indigenous Protected Areas and National Heritage places classed as natural are discussed in **Section 11.3**. Historic and/or Indigenous National Heritage Listed Places of the NWMR and SWMR include:

- Dampier Archipelago (including Burrup Peninsula)
- Dirk Hartog Landing Site/Cape Inscription
- *HMAS Sydney II*, *HSK Kormoran* Shipwreck Sites
- *Batavia* Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos
- Cheetup Rock Shelter

Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values, which are owned or controlled by the Australian Government. A number of these sites are owned or controlled by the Department of Defence, as well as Government agencies relating to maritime safety, customs and communication. Commonwealth Heritage places classed as natural are discussed in **Section 11.3**. Listed Heritage Places in the NWMR are all natural with two related to defence activities which include:

- Yampi Defence Area (**Table 11-6**)
- Learmonth Air Weapons Range Facility (**Table 11-6**)

World Heritage Properties are those sites that hold universal value which transcends any value that may be held by any one nation. These sites and their qualities are detailed in the Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), to which Australia is a founding member. The Protected Matters Search Report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) lists two natural World Heritage Properties in the NWMR (refer **Section 11.2**). There are no cultural heritage listings located within the NWMR.

Summary tables of heritage places for NWMR, SWMR and NMR are presented in **Table 12-3,Table 12-4**and **Table 12-5.**

Table 12-3 Heritage Places (Indigenous and Historic) within the NWMR

Heritage Places	Woodside Activity Area			Class	Description	Conservation Values
	Browse	NWS/S	NW Cape			
National Heritage Properties						
Dampier Archipelago (including Burrup Peninsula)	-	✓	-	Indigenous	The Dampier Archipelago (including the Burrup Peninsula) contains one of the densest concentrations of rock engravings in Australia with some sites containing thousands or tens of thousands of images.	The rock engravings comprise images of avian, marine and terrestrial fauna, schematised human figures, figures with mixed human and animal characteristics and geometric designs. At a national level it has an exceptionally diverse and dynamic range of schematised human figures some of which are arranged in complex scenes. The fine execution and dynamic nature of the engravings, particularly some of the composite panels, exhibit a degree of creativity that is unusual in Australian rock engravings.
Dirk Hartog Landing Site 1616 – Cape Inscription Area	-	-	✓	Historic	Cape Inscription is the site of the oldest known landings of Europeans on the WA coastline.	The Cape Inscription area displays uncommon aspects of Australia's cultural history because of the cumulative effect its association with these explorers and surveyors had on growing knowledge of the great southern continent in Europe. The association of the site with these early navigators stimulated the development of the European view of the great southern continent at a time when they began to look at the world with a modern scientific outlook.
Commonwealth Heritage Properties						
None						

Table 12-4 Heritage Places (Indigenous and Historic) within the NMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
None			
Commonwealth Heritage Properties			
None			

Table 12-5 Heritage Places (Indigenous and Historic) within the SWMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
Cheetup Rock Shelter	Indigenous	Cheetup, meaning "place of the birds", is the name of a spacious rock shelter located in Cape Le Grand National Park, about 55 km east of Esperance in WA. First Nations people associated with the place identify themselves as Nyungar/Noongar, Ngadju (shortened from Ngadjunmaia) or Mirning.	Cheetup rock shelter provides outstanding evidence for the antiquity of processing and use of cycad seeds by First Nations people. The seeds of the cycad are extremely toxic and can cause speedy death if eaten fresh without proper preparation to remove the toxins. The presence of *Macrozamia riedlei* seeds in a pit lined with Xanthorrhoea (grass tree) leaf bases indicates that First Nations people in the Esperance region had the knowledge to remove the toxins of this important source of carbohydrate and protein at least 13,200 years ago.
Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos	Historic	The Batavia and its associated sites hold an important place in the discovery and delineation of the WA coastline. The wreck of the Batavia, and other Dutch ships like her, convinced the VOC (Dutch East India Company) of the necessity of more accurate charts of the coastline and resulted in the commissioning of Vlamingh's 1696 voyage.	Because of its relatively undisturbed nature the archaeological investigation of the wreck itself has revealed a range of objects of considerable value as well as to artefact specialists and historians.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	The naval battle fought between the Australian warship HMAS Sydney II and the German commerce raider HSK Kormoran off the WA coast during World War II was a defining event in Australia's cultural history. HMAS Sydney II was Australia's most famous warship of the time and this battle has forever linked the stories of these warships to each other. The loss of HMAS Sydney II along with its entire crew of 645 following the battle with HSK Kormoran, remains as Australia's worst naval disaster.	The shipwreck sites of HMAS Sydney II and HSK Kormoran have outstanding heritage value to the nation because of their importance in a defining event in Australia's cultural history and for their part in development of the process of the defence of Australia.

Heritage Places	Class	Description	Conservation Values
Commonwealth Heritage Properties			
Cliff Point Historic Sites	Historic	Cliff Head is a limestone bluff on the east coast of Garden Island. Evidence of occupation has been reported from the beach just north of the head, the immediate hinterland, the ridge above and on the south face of the ridge.	The Cliff Point Historic Site, individually significant within the area of Garden Island, is important as the first site inhabited by Governor Stirling's party in 1829 when founding the colony of WA, and as WA's first official non-convict settlement. The site was occupied in the first instance by Captain Charles Fremantle before the arrival of Captain Stirling. The party occupied the site for two months before a move was made to the Swan River settlement on the mainland.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	As above.	As above.
J Gun Battery	Historic	J Battery comprised two 155 mm long range guns, the other similar battery being at Cape Peron on the mainland at the entrance to Cockburn Sound. Located in the dune systems at the north western corner of Garden Island, elements of the J Battery complex are now covered in part by sand.	J Gun Battery (1942) is individually significant within the area of Garden Island (Register No. 019544) and is historically important as the first gun battery constructed on Garden Island and as one of two long range gun batteries which played a strategic role in the coastal defences of Cockburn Sound and Fremantle following the entry of Japan into the Second World War (1939-45).

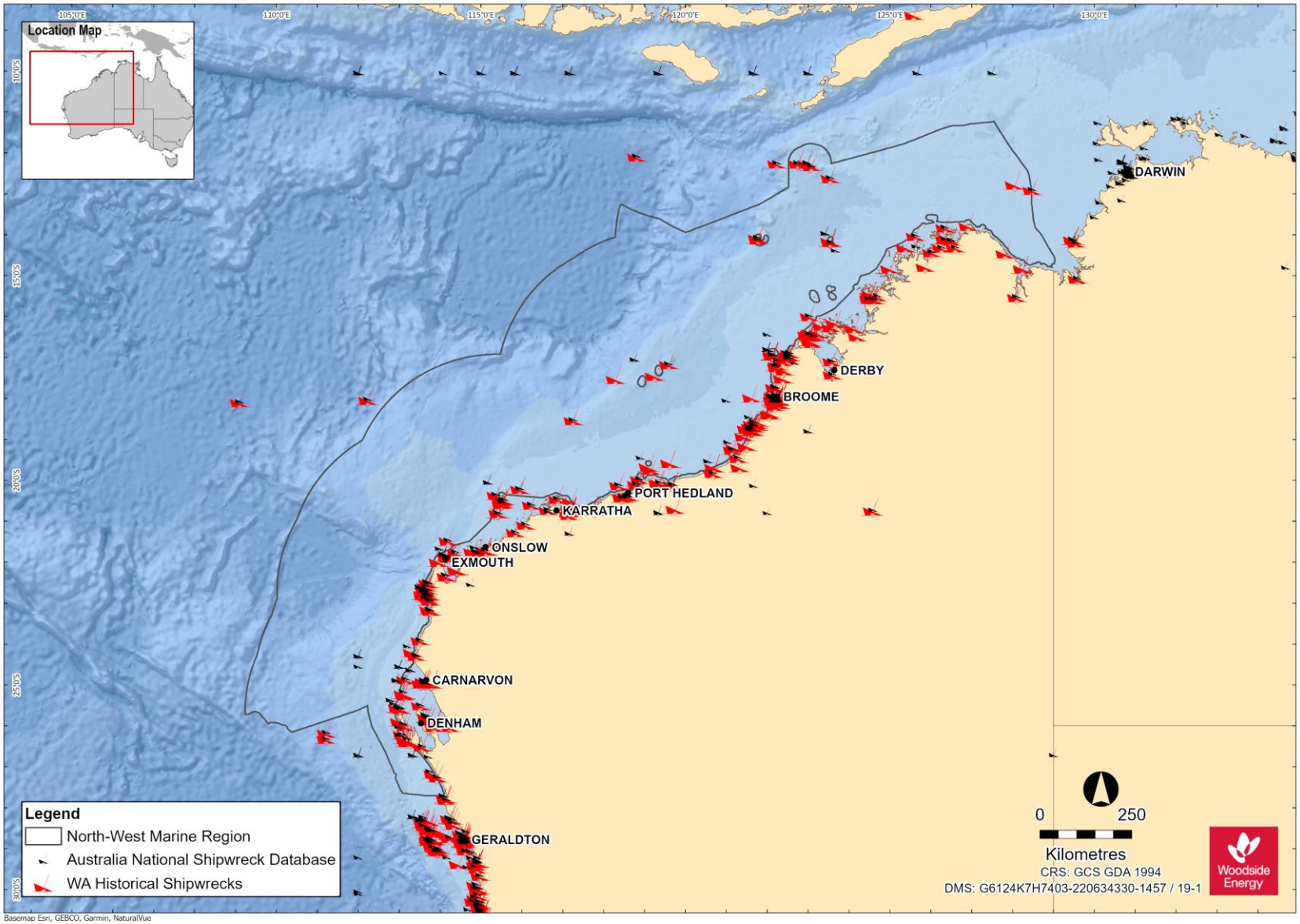


Figure 12-6 Shipwrecks in the NWMR (data source: WAM, 2018 and AODN, 2008)

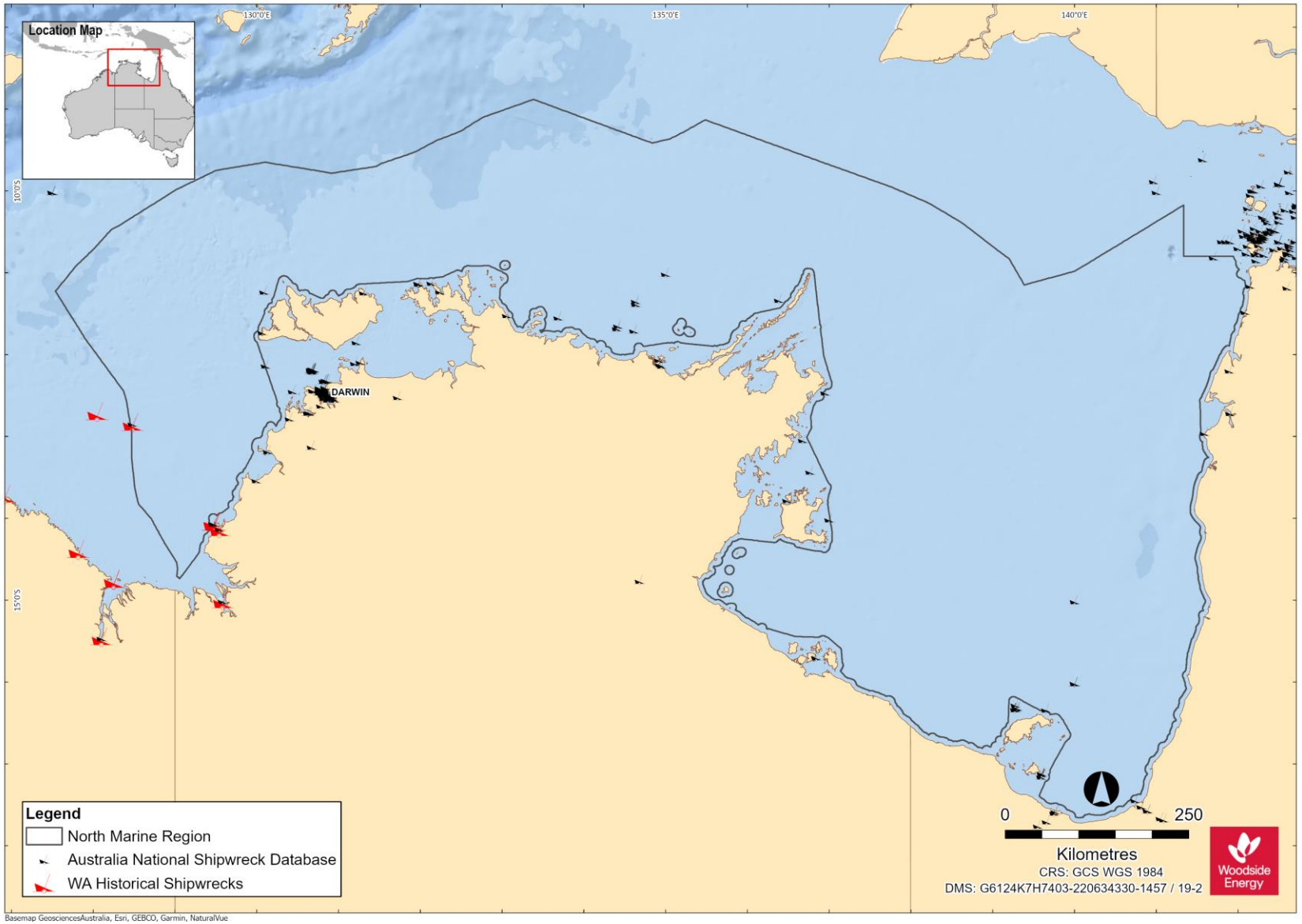


Figure 12-7 Shipwrecks in the NMR (data source: WAM, 2018 and AODN, 2008)

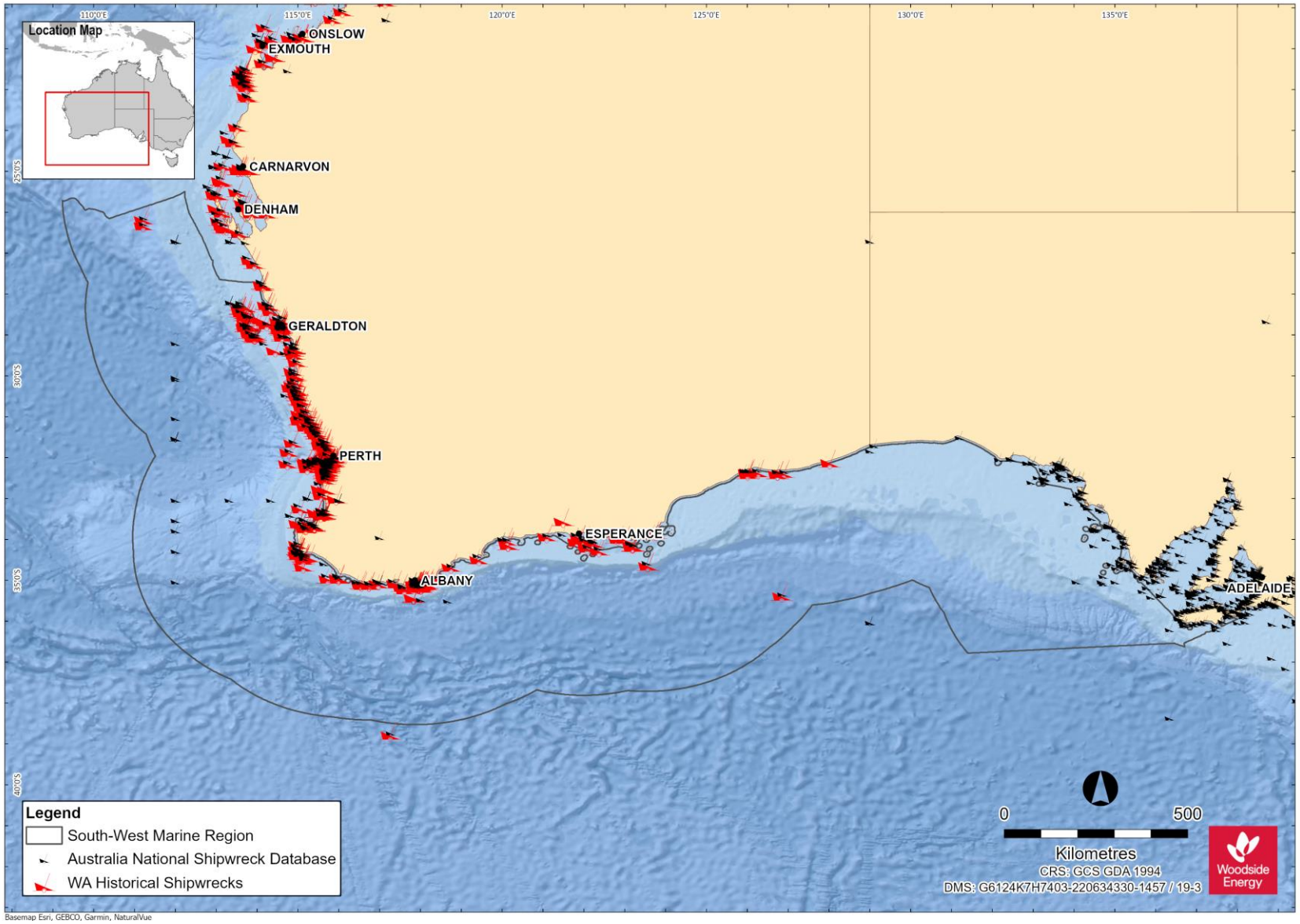


Figure 12-8 Shipwrecks in the SWMR (data source: WAM, 2018 and AODN, 2008)

12.2 Socio-Economic Values

Socio-economic values include commercial and traditional fishing, tourism and recreation, shipping, oil and gas activities and defence activities.

12.2.1 Commercial Fisheries Commonwealth and State

The Australian Fisheries Management Authority (AFMA) manages fisheries on behalf of the Commonwealth Government and is bound by objectives under the *Fisheries Management Act 1991* (Cth).

WA State commercial fisheries are managed by the WA Department of Primary Industries and Regional Development (WA DPIRD) under the *Fish Resources Management Act 1994* (WA), *Fisheries Resources Management Regulations 1995* (WA), relevant gazetted notices and licence conditions, and applicable Fishery Management Plans.

Commonwealth and State managed fisheries that are licensed to operate within the NWMR are summarised in **Table 12-6**.

Table 12-6 Commonwealth and State managed fisheries

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Commonwealth Managed Fisheries							
Southern Bluefin Tuna Fishery	✓	✓	✓	**Management area**	The Southern Bluefin Tuna Fishery covers the entire EEZ around Australia, out to 200 nm from the coast. They do not fish in the Woodside activity area.		
				Species targeted	**Fishing methods**	**Fishing depth**	
				Southern bluefin tuna (*Thunnus maccoyii*)	Longline, purse seine fishing, and minor line (troll and poling).	Southern bluefin tuna is a pelagic species which can be found to depths of 500 m (AFMA, 2021a).	
				Fishing effort	Most of the Australian fishing effort is by purse-seine vessels in the Great Australian Bight and waters off South Australia during summer months, and by longline off the New South Wales coastline during winter months (Patterson and Dylewski, 2023a). The Southern Bluefin Tuna Fishery is shared amongst countries. Australia currently has a 35% share of the total global allowable catch. Whilst wild capture fishing in Australia to sell directly to market can occur anywhere throughout the fisheries range, currently most of that quota is value-added through ranching (on-growing the wild captured fish for an extra 5-6 months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed/sardines (40,000+ tonnes). North-west WA is critically important regardless of how the quota is fished because of the proximity to the single spawning ground of this global roaming species. Young fish (1–4 years of age) move from the spawning ground in the north-east Indian Ocean into the Australian EEZ and southwards along the Western Australian coast (Patterson and Dylewski, 2023). The stock is classified as not overfished (Patterson and Dylewski. 2023a). A total of 5,972 t bluefin tuna catch was recorded for the 2021-22 fishing season, an increase from 5,646 t in the 2020-21 period (Patterson and Dylewski, 2023a). Of the total catch, 4,957 t were collected using purse seine and 1,015 from pelagic longline.	
				Active licences/vessels	Eight purse seine vessels and 22 longline vessels, an increase from 7 purse seine vessels and 20 longline vessels in the 2020-21 period (Patterson and Dylewski, 2023a).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Western Skipjack Tuna Fishery	✓	✓	✓	**Management area**	The combined western and eastern skipjack tuna (*Katsuwonus pelamis*) fisheries encompass the entire Australian EEZ. The Western Skipjack Tuna Fishery extends westward from the SA/ Victorian border across the Great Australian Bight and around the west coast of WA to the Cape York Peninsula.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western skipjack tuna (*Katsuwonus pelamis*)		Fishers use purse seine gear (about 98% of catch) and sometimes pole and line when fishing for skipjack tuna.	Western skipjack tuna is a pelagic species that can be found to depths of 260 m (AFMA, 2021b).
				Fishing effort:	The Skipjack Tuna Fishery has not been actively fished since the 2008-2009 fishing season (Patterson and Delewski, 2023b). The management arrangements for this fishery will be reviewed if active boats re-enter the fishery.		
				Active licences/vessels:	No active vessels operating since 2009 (Patterson and Delewski, 2023b).		
Western Tuna and Billfish Fishery	✓	✓	✓	**Management area**	The Western Tuna and Billfish Fishery extends to the Australian EEZ boundary in the Indian Ocean.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Key species caught in the fishery are bigeye tuna (*Thunnus obesus*), yellowfin tuna (*T. albacares*) and swordfish (*Xiphias gladius*). Striped marlin (*Kajikia audax*) is a minor component of the catch. Catch of albacore (*T. alalunga*), a non-quota species, can approach levels similar to yellowfin tuna catch in some years (Blake et al., 2022a).		Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used, and purse seine.	Species have a broad depth distribution, with tuna occurring at 150 – 300 m, striped marlin at 150 m and swordfish at up to 600 m (BRS, 2007).
				Fishing effort:	The fishery operates in Australia's EEZ and high seas of the Indian Ocean. Fishing effort in recent years has been concentrated off south-west WA, with occasional activity off SA (Patterson et al., 2023).		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">A total of 145 t catch was landed in the 2021-22 seasons, a decrease from 252 t in the 2020-21 period (Patterson, et al., 2023).
The striped marlin, bigeye tuna, and yellowfin tuna are classified as subject to overfishing (Patterson et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">Two pelagic longline and 3 minor line vessels were active during the 2021-22 season (Patterson, et al., 2023).</td></tr>
<tr><td>Western Deepwater Trawl Fishery</td><td></td><td></td><td>✓</td><td>Management area</td><td colspan="3">The Western Deepwater Trawl Fishery is in deep water off WA, from the line approximating the 200 m isobath to the edge of the Australian Fishing Zone (AFZ). (Blake et.al. 2021).</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">More than 50 species, historically dominated by six commercial finfish species or species groups:
Orange roughy (Hoplostethus atlanticus)
Oreos (Oreosomatidae)
Boarfish (Pentacerotidae)
Eteline snapper (Lutjanidae: Etelinae)
Apsiline snapper (Lutjanidae: Apsilinae)
Sea bream (Lethrinidae).</td><td>Demersal trawl.</td><td>Water deeper than 200 m. (Blake et.al. 2021).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">The number of vessels active in the fishery and total hours trawled have fluctuated from year to year. Notably, total hours trawled were relatively high for a brief period during the early 2000s when fishers targeted ruby snapper and deep-water bugs (Patterson et al., 2020).
Total trawl hours have been variable but relatively low since 2005-06. In 2021-22, 76 trawl-hours were recorded in the fishery, down from a recent peak of 1,108 in 2017-18 (Keller et al., 2023)</td></tr>
</table>

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">The total catch was 12 t in the 2021-22 season, up from 5 t in the 2020-21 season and no deepwater bugs were caught between 2020 and 2022 (Keller et al., 2023). Ruby snapper made up 40% of the catch in 2021-22 and 31% in 2020-21 (Keller et al., 2023).
Ruby snapper and deepwater bugs stock are considered not subject to overfishing but the biomass status of deepwater bugs are classified as uncertain (Keller, et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">Since 2004-05, 1-3 vessels have been active in the fishery, with 2 active vessels in 2021-22 (Keller, et al., 2023).</td></tr>
<tr><td>North-west Slope Trawl Fishery</td><td>✓</td><td>✓</td><td></td><td>Management area</td><td colspan="3">The North-west Slope Trawl Fishery extends from 114 °E to 125 °E, from the 200 m isobath to the outer limit of the AFZ (200 nm from the coastline, which is the boundary of the Australian EEZ).</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Australian scampi (Metanephrops australiensis) and smaller quantities of velvet and Boschma’s scampi (M. velutinus and M. boschmai). A quantity of prawns is harvested each season, and squids are becoming an increasingly significant component of the catch.
Mixed snappers (Lutjanidae) and redspot emperor (Lethrinus lentjan) have historically been an important component of the catch Blake et al., 2021).</td><td>Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson et al., 2017).</td><td>Typically depths of 350 to 600 m (Patterson et al., 2017)</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">The North-west Slope Trawl Fishery commenced in 1985 and the number of active vessels peaked at 21 in the 1986-1987 season, decreasing to between 1 and 6 vessels per year since 2005-06 (Keller and Curtotti, 2023).
A total catch of 85.8 t was recorded in 2021-22, a decrease from 87.05 t in 2020-21 (Keller and Curtotti, 2023). Of the total catch, the Australian scampi species comprised of approximately 33% (29 t), down from 50% (44 t) in 2020-21.
The stock assessment of scampi in the fishery are classified as not subject to overfishing (Keller and Curtotti, 2023).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	Three vessels were active in the 2021-22 season, decline from 4 in the 2021-22 season, and trawl-hours decreased from 4,420 in 2020-21 to 3,950 in 2021-22 (Keller and Curtottie, 2023).		
State Managed Fisheries							
Pilbara Fish Trawl (Interim) Managed Fishery		✓		**Management area**	The Pilbara Trawl (Interim) Managed Fishery is a high intensity fishery divided into two zones and an area governed by Schedule 5 (prohibited to trawling). In addition to the Prohibited Trawl Fishing area, no fish trawl units are allocated for use in Zone 1 or Areas 3 and 6 of Zone 2 (which comprises six management areas) (Newman et al., 2021a).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The fishery targets more than 50 scalefish species. The main demersal scalefish species landed by the fisheries in the Pilbara region are bluespotted emperor, red emperor and rankin cod (Newman et al., 2021a). The key species caught by the Pilbara Trawl (Interim) Managed Fishery include crimson snapper, bluespotted emperor trevally and threadfin bream (DPIRD, 2020).		Demersal trawl. The fishery operates with standard stern trawling gear (single net with extension sweeps) (Newman et al., 2021a).	The fishery operates in waters between 50 and 200 m water depth (Allen et al., 2014, Newman et al. 2015).
				Fishing effort:	Based on State of the Fisheries annual reports provided by DPIRD, catch trends were seen to be increasing over the past reporting years, until the past two seasons: The Pilbara Trawl (Interim) Managed Fishery catch was 1784 t in 2022,1928 t in 2021, 2087 t in 2020, 2142 t in 2019, 1996 t in 2018, 1780 t in 2017, 1529 t in 2016, 1172 t in 2015 and 1105 t in 2014. (Wakefield et al., 2023a) The fishery landed 72% of total commercial catches of the demersal scale fish in the Pilbara in 2022. Increasing catch rates and fishing mortality spawning biomass estimates indicate that imposed effort reductions since 2008 have resulted in increased fish abundance and stock rebuilding in the fishery (Wakefield et al., 2023a). In 2021, the total catch of the indicator species red emperor in the Pilbara Demersal Scalefish Fisheries (includes trawl, trap and line sectors) was 192 t, which is within the acceptable catch range (Wakefield et al., 2023).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					The biological stocks for the Pilbara Demersal Scalefish Fisheries are classified as sustainable-adequate (Wakefield et al., 2023a).		
				Active licences/vessels:	Four active vessels in the trawl sector in 2022 (Wakefield et al., 2023a).		
Pilbara Trap Managed Fishery		✓	✓	**Management area**	The Pilbara Trap Managed Fishery covers the area from Exmouth northwards and eastwards to the 120° line of longitude, and offshore as far as the 200 m isobath. Like the trawl fishery, the trap fishery is also managed using input controls in the form of individual transferable effort allocations monitored with a satellite-based vessel management system. The fishery includes six licences allocated to three vessels, operating principally from Onslow.		
				Species targeted		**Fishing methods**	**Fishing depths**
				The catch is made up of around 45-50 different fish species. The fishery generally targets long-lived, high-value demersal scalefish such as red emperor and Rankin cod but also lands significant catches of shorter-lived species such as blue spotted emperor (DPIRD, 2020).		Demersal fish traps.	Approximately 30 m isobath to 200 m isobath (DPIRD n.d.).
				Fishing effort	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Pilbara Trap Managed Fishery caught 597 t in 2022, 662 t in 2021, 584 t in 2020, 680 t in 2019, 563 t in 2018, 573 t in 2017, 495 t in 2016, 510 t in 2015 and 268 t in 2014. (Wakefield et al., 2023a) The total catch of 597 t in 2022 made up 24% of the total catch by the Pilbara Demersal Scale Fishery and exceeded the acceptable catch range for the total catch (Wakefield et al., 2023a).		
				Active licences/vessels	Three active vessels in the trap sector in 2022 (Wakefield et al., 2023a).		
		✓	✓	**Management area**	The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within "Pilbara water", bounded by a line commencing at the intersection of 21° 56'S latitude and the high-water mark on the western side		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Pilbara Line Managed Fishery					of the North-west Cape on the mainland of WA; west along the parallel to the intersection of 21° 56'S latitude and the boundary of the AFZ and north to longitude 120°E.		
				Species targeted		**Fishing method**	**Fishing depths**
				The Pilbara Line Managed Fishery catch is made up around 45-50 different fish species. The fishery targets similar demersal species to the Pilbara Trap and Trawl fisheries, as well as some deeper offshore species such as ruby snapper and eightbar grouper (DPIRD, 2020).		Demersal long line.	Information not available.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are as follows: The Pilbara Line Managed Fishery caught 104 t in 2022, 124 t in 2021, 167 t in 2020, 148 t in 2019, 93 t in 2018, 143 t in 2017, 126 t in 2016, 97 t in 2015 and 40 t in 2014. (Wakefield et al., 2023a) The total catch of 104 t in 2022 made up 4% of the total catch by the Pilbara Demersal Scalefish Fishery and was within the acceptable catch range (Wakefield et al., 2023a).		
				Active licences/vessels	Four active vessels in 2022 (Wakefield et al., 2023a).		
Mackerel Managed Fishery	✓	✓	✓	**Management area**	The commercial fishery extends from the West Coast Bioregion to the WA/ NT border. There are three managed fishing areas: Area 1: Kimberley (121º E to the WA/NT border); Area 2: Pilbara (114º E to 121º E) and Area 3: Gascoyne (27º S to 114º E) and West Coast (Cape Leeuwin to 27º S) (Lewis et al., 2020).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Spanish mackerel (*Scomberomorus commerson*) Grey mackerel (*S. semifasciatus*)		Trolling, baits or lures cast, jigging (Lewis et al., 2020).	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Other species from the genus *Scomberomorus*		
				Fishing effort:	Most of the catch is taken from waters off the Kimberley and Pilbara coasts (Lewis et al., 2020), reflecting the tropical distribution of mackerel species (Molony et al., 2015). Most fishing activity occurs around the coastal reefs of the Dampier Archipelago and Port Hedland area, with the seasonal appearance of mackerel in shallower coastal waters most likely associated with feeding and gonad development before spawning (Mackie et al., 2003). Previous years catch based on State of the Fisheries annual reports provided by DPIRD: 212 t in 2022, 310 t in 2021, 290 t in 2020, 291 t in 2019, 214 t in 2018 (the lowest on record (Lewis et al., 2020), 283 t in 2017, 276 t in 2016, 302 t in 2015 and 322 t in 2014. (Lewis, P., Rynvis, L. 2023) The landed catch in 2021 was 238 t for Spanish mackerel and 10 t for grey mackerel (Lewis and Watt. 2023). The commercial landings for other large pelagic species, such as the amberjack and cobia were 19.7t and 18.2t, and other species contributed to the remaining <10t of the total catch (Lewis and Watt. 2023). All species stocks are sustainable-adequate (Lewis, P., Rynvis, L. 2023).	
				Active licences/vessels:	There were 16 vessels in 2022, primarily from May to November (Lewis, P., Rynvis, L. 2023).	
Marine Aquarium Fish Managed Fishery	✓	✓	✓	**Management area**	The Marine Aquarium Fish Managed Fishery can operate throughout WA State waters. The fishery is typically more active in waters south of Broome and higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Dampier, and Broome (Newman et al., 2021b). There has been recent effort in the waters from Broome northwards to the NT border. (Newman et al., 2023a)	
				Species targeted	**Fishing methods**	**Fishing depth**
				Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms etc.), algae, seagrasses and 'live rock'. The resource potentially includes over 1500 species of marine aquarium fishes (Newman et al., 2021b).	The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).	Information not available.

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	Total catch for the Marine Aquarium Fish Managed Fishery in 2022 was 98,694 fishes and invertebrates, 17.83 t of coral, live rock, and living sand, and 39L of marine plants and live feed. (Newman et al., 2023a) In 2021, the total catch for the Marine Aquarium Fish Managed Fishery was 92,227 fishes (including syngnathids, invertebrates and sponges), 27.97 t of coral. Live rock, and living sand, and 42 L of marine plants and live feed (Newman et al., 2023). In 2020 was 89,925 fishes, 32.12 t of coral, live rock & living sand and <20L of marine plants and live feed (Newman et al., 2021b). Dominant fish species caught in 2022 include spotted blenny (*Istiblennius meleagris*), scribbled angelfish (*Chaetodontoplus duboulayi*), black-axil chromis (*Chromis atripectoralis*), stripey (*Microcanthus strigatus*), Vachell's Glassfish (*Ambassis vachellii*), Margined Coralfish (*Chelmon marginalis*), Black-axil Chromis (*Chromis atripectoralis*), and Blue and Yellow Wrasse (*Anampses lennardi*). (Newman et al., 2023a). The breeding stocks of landed species are classified as sustainable-adequate (Newman et al., 2023a)		
				Active licences/vessels:	13 licences were active in 2022 across the Marine Aquarium Fish Managed Fishery and the Hermit Crab Fishery (Newman et al., 2023a).		
Western Australian Sea Cucumber Fishery (formerly Beche-de-mer Fishery)	✓	✓	✓	**Management area**	Fishing occurs mostly in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemptions. Shark Bay was fished for the first time in 2020 (Hart et al., 2023a) and again in 2021 (Newman et al., 2022).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Western Australian Sea Cucumber Fishery targets two main species: sandfish (*Holothuria scabra*) and redfish (*Actinopyga echinites*).		Diving and wading. Collected by hand.	The targeted species typically inhabit nearshore in shallow depths.
				Fishing effort	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Western Australian Sea Cucumber Fishery caught 56.5 t in 2022, 41.3 t in 2021 3.6 t in 2020, 6.9 t in 2019, 62 t in 2018 (Gaughan and Santoro, 2020), 135 t in 2017, 93 t in 2016 and 38 t in 2015. In 2022, 45.2 t of the total catch consisted of sandfish (*Holothuria scabra*), 10.8 t deepwater redfish (*Actinopyga echinites*), and 0.5 t of black teatfish (*Holothuria whitmaei*) (Newman et al., 2023d). Sandfish were collected from the Kimberley only, which was last fished in 2017 (Hart et al., 2023).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Deepwater redfish and black teatfish were harvested from Shark Bay (under an exception licence granted to native title holders), which was the second time this stock had been fished (Hart et al., 2023). The stock status of sandfish, in the Kimberly, and red fish species landed are considered to be sustainable-adequate, while the sandfish in the Pilbara are not sustainable – inadequate. (Hart et al., 2023f).		
				Active licences/vessels	2 operating vessels operating 2022 (Hart et al., 2023f)		
Onslow Prawn Managed Fishery		✓		**Management area**	The Onslow Prawn Managed Fishery encompasses a portion of the continental shelf off the Pilbara.		
				Species targeted		**Fishing methods**	**Fishing depth**
				The fishery targets: • Western king prawns (*Penaeus esculentus*) • Brown tiger prawns (*Penaeus esculentus*) • Blue endeavour prawns (*Metapenaeus endeavouri.*		Low opening, otter prawn trawl systems.	Fishery and or fishing activity overlaps the Beadon Creek dredging scope (Sporer et al., 2015).
				Fishing effort:	The total landings for the Onslow Prawn Managed Fishery in 2022 are not available due to data confidentiality (Wilkin, et al. 2023b). In 2021 were less than the target catch range of 60 t (Kangas et al.,2023a). 37 days of fishing took place in 2021, compared to 13 days in 2020 (Kangas et al., 2023a). The breeding stocks of banana, brown tiger, and western king prawns are considered sustainable-adequate (Kangas et al., 2023a).		
				Active licences/vessels:	One vessel active in 2021 (Kangas et al., 2023a).		
Pearl Oyster	✓	✓	✓	**Management area**	The Pearl Oyster Managed Fishery is located in shallow coastal waters, designated by four zones extending from Exmouth to Kununurra and the seaward boundary demarcated by the 200 nm EEZ. The fishery is currently managed under the *Pearling Act 1990* (Hart et al., 2023b)		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Managed Fishery				**Species targeted**	**Fishing methods**	**Fishing depth**
				Silver lipped pearl oysters (*Pinctada maxima*).	Drift diving.	Fishing effort is mostly focused in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs et al., 2002).
				Fishing effort:	In 2021, catch was taken from Zones 2 and 3 only with no fishing in Zone 1, which has not been fished from 2017 to 2021 (Hart et al., 2023b). In 2022, the number of wild-caught pearl oysters was 756,531 (Hart et al., 2023d). Total dive hours increased in 2022 from 8,175 hours in 2021 to 10.906 hours due to a 28% increase in harvest. (Hart et al., 2023d). Zones one to three are all considered to be sustainable – adequate (Hart et al., 2023b).	
				Active licences/vessels:	Six active vessels in 2022 (Hart et al., 2023b).	
Pilbara Crab Managed Fishery		✓	✓	**Management area**	The Pilbara Crab Managed Fishery covers inshore waters from Onslow to Port Hedland (between longitudes 115° 5’ 60” E and 120° E), with most activity around Nickol Bay (Johnston et al., 2020b). Areas of the fishery north and east of Exmouth and nearshore are currently closed as per Schedule 2 of the Draft Management Plan for the Pilbara Crab Managed Fishery (DPIRD, 2018b).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus)* (Johnston et al*.,* 2021).	Hourglass traps (Johnston et al., 2021).	Up to 50m deep (Johnston et.al., 2020a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Catch for the Pilbara Crab Managed Fishery was 11.2 t in 2022, 9.7 t in 2021, 0.6 t in 2020 and 19.3 t in 2019. (Johnston et al., 2023a). The total catch in 2021 was a substantial increase from the 2.1 t caught in 2020, which was the lowest landed catch in 20 years (Johnston et al., 2023a). In 2022 the blue swimmer crab catch accounted for 2% of the State commercial catch, all taken by the fishery (Johnston et al., 2023a). The blue swimmer crab stock status is considered sustainable – adequate (Johnston et al., 2023a).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	No information available currently.		
South West Coast Salmon Managed Fishery	✓	✓	✓	**Management area**	The South-west Coast Salmon Managed Fishery operates on various beaches south of the metropolitan area and includes all WA waters north of Cape Beaufort except Geographe Bay.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western Australian salmon (*Arripis truttaceus*)		Beach seine nets.	Information not available.
				Fishing effort:	No fishing occurs north of the Perth metropolitan area, despite the managed fishery boundary extending to Cape Beaufort (WA/Northern Territory border), as advised by WAFIC. The commercial catch for the entire West Coast Nearshore and Estuarine Finfish resource was 302.5 t in 2022. The total catch of Western Australian salmon was 82.9 t in 2022, a decrease from 88.5 t in 2021. The Western Australian Salmon stock status is considered sustainable – adequate. (Duffy et al., 2023c).		
				Active licences/vessels:	The number of active vessels or licences in 2021 is unknown however there were approximately 12 commercial fishers employed in 2018 (Duffy et al., 2023)		
Specimen Shell Managed Fishery	✓	✓	✓	**Management area**	The Specimen Shell Managed Fishery encompasses the entire WA coastline, but effort is concentrated in areas adjacent to the population centres such as Broome, Exmouth, Shark Bay, Geraldton, Perth, Mandurah, the Capes area and Albany (Hart et al., 2023c). There are several closed areas where the fishery is not permitted to operate. These include various marine parks and aquatic reserves, such as Ningaloo Marine Park. The Perth metropolitan area is also important because of its populations of two rare cowrie species (Hart et al., 2023c).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Specimen Shell Managed Fishery targets the collection of specimen shells for display, collection, cataloguing and sale. About 200 species of Specimen Shell are collected each year. There is some focus of effort on mollusc families that are most		Collection is predominantly by hand when diving to wading in shallow, coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).	For collection by hand, (diver-based) this typically restricts effort to safe diving depths (less than 30 m). ROV collection could enable depths up to 300 m (Hart et al., 2023c).

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				popular with shell collectors, such as cowries, cones, murexes and volutes (Hart et al., 2023c).		
				Fishing effort:	A total of 5,074 specimen shells were collected in 2022, distributed over 200 species. (Hart et al., 2023f) A total of 5,443 specimen shells were collect distributed over 200 species in 2021 (Hart et al., 2023b). Total number of specimen shells collected in 2020 was 4,258 shells, across 206 species (Hart et al., 2021c). Stocks of landed species in the Specimen Shell Managed Fishery are classified at sustainable-adequate (Hart et al., 2023f).	
				Active licences/vessels:	An exemption for the trial of remotely operated underwater vehicles (limited to one per licence) was in place during 2021 (Hart et al., 2023c). There was a total of 30 licences in the fishery, of which 16 licences were fished in 2022. (Hart et al., 2023f). Effort in 2022 was 388 days (Hart et al., 2023f).	
West Australian Abalone Fishery	✓	✓	✓	**Management area**	The Western Australian Abalone Managed Fishery includes all coastal waters from the WA and SA border to the WA and NT border. The fishery is concentrated on the south coast and the west coast. It is divided into eight management areas. The fishery for Greenlip and Brownlip abalone operates in areas 1-4 and the Roe's abalone fishery operates in areas 1, 2, 5, 6, 7 and 8 (DoF, 2011).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Greenlip abalone (*Haliotis laevigata*) Brownlip abalone (*Haliotis conicopora*) Roe's abalone (*Haliotis roei*)	Divers.	Distribution to 5 m depth for Roe's abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total catch for greenlip and brownlip abalone in 2022 was 40.1 t whole weight (26.6 t Greenlip and 13.5 t Brownlip), (Strain et al., 2023d), an increase from 2021 which was 39 t whole weight (greenlip 25.9 t and brownlip 13.1 t) (Strain et al., 2023a). The total catch in 2021 was the lowest catch recorded for Greenlip/Brownlip in 53 years (Strain et al., 2023d). The Roe's abalone resource catch for 2022 was 28.9 t, a 2.6% decrease from the previous season. (Strain et al., 2023c) In 2021 was 29.7 t whole weight, an increase from 18.2 t whole weight in 2020 (Strain et al., 2023a).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					The stock status of greenlip abalone is considered inadequate and brownlip abalone is adequate (Strain et al., 2023a). The stock status of the Roe's abalone is considered adequate (Strain et al., 2023c).		
				Active licences/vessels:	There were 16 registered vessels in 2022 for Greenlip and Brownlip Abalone Fishery (Strain et al., 2023d) and 21 for Roe's, however only a small proportion were active (Strain et al., 2023c).		
Western Australia Joint Authority Northern Shark Fishery	✓			**Management area**	The Western Australia Joint Authority Northern Shark Fishery extends from longitude 12'° 45'E to the Northern Territory border.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blacktip sharks (*Carcharhinus tilstoni*) and spot-tail shark (*Carcharhinus sorrah*).		Gillnets and longlines.	Information not available.
				Fishing effort	Since 2005, 60% of the waters have been closed to finishing and limited on the number of fishing days. No catch has been reported since 2008/2009 (Braccini and Watt. 2023).		
				Active licences/vessels	Information not available.		
West Coast Deep Sea Crustacean Managed Fishery	✓	✓	✓	**Management area**	The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ.		
				Species targeted		**Fishing methods**	**Fishing depth**
				The fishery targets deepwater crustaceans: • Crystal (snow) crab (*Chaceon albus*)		Baited pots, or traps, are operated in long-lines which have between 80 and 180 pots attached to a main line marked by a float at each end.	Deeper than 150 m (and mostly at depths of between 500 m – 800 m). Most of the

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="3"></th></tr>
<tr><td></td><td></td><td></td><td></td><td>• Giant (king) crab (Pseudocarcinus gigas)
• Champagne (spiny) crabs (Hypothalassia acerba)
Catches are dominated by crystal crabs of which 99% of their Total Allowable Catch (TAC) was landed in 2020 (How and Baudains, 2021).</td><td></td><td>commercial Crystal crab catch is taken in depths of 500 m – 800 m (WAFIC[23]).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The total landings were 133.5 t in 2022, 155.5 t in 2021, 156.1 t in 2020, 155.7 t in 2019 and 168 t in 2018.
The total landings of crustaceans in 2022 was dominated by crystal crabs (123.2 t). A further 10 t of champagne crabs and 0.1 t of giant crab were also landed in 2022 (How, et al. 2023c).
The stock status for crystal crab is considered adequate. However, it is likely that the stock biomass is near or below its threshold level, but above its limit level (How and Wiberg. 2023a).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="2">There were seven licence holders with five vessels active in 2022 (How, et al. 2023c).</td></tr>
<tr><td rowspan="4">Abrolhos Islands and Mid-West Trawl Fishery</td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4">✓</td><td>Management area</td><td colspan="2">The Abrolhos Islands and Mid-West Trawl Fishery operates around the Abrolhos Islands within the SWMR.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Saucer scallops (Ylistrum balloti, formerly Amusium balloti)</td><td>Otter trawl.</td><td>Saucer Scallops occur in inshore waters around 40m depth at the Abrolhos Islands (Kangas et.al., 2021a).</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The Abrolhos Islands and Mid-West Trawl Fishery did not fish in 2022 due to the stock being environmentally limited. (Wilkin, et al. 2023a) The fishery landed 123.1 t meat weight (615.1 t whole weight) in 2021, 238.6 t meat</td></tr>
</table>

[23] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					weight (1192.8 t whole weight) in 2020, 159.1 t meat weight (795.6 t whole weight) in 2019 and 31.0 t meat weight (154.8 t whole weight) in 2018. Between 2011 and 2015, the annual pre-season surveys showed very low recruitment (1-year old), due to the 2011 extreme marine heatwave and subsequent poor pawning stock (Kangas et al., 2020). The fishery was closed in 2009, and between 2011 and 2016 (Kangas et al., 2023b).		
				Active licences/vessels:	The number of vessels is unreported. There were 10 licenses in 2021 (Kangas et al., 2023b).		
Broome Prawn Managed Fishery	✓			**Management area**	The Broome Prawn Managed Fishery operates off Broome and forms part of the North Coast Prawn Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawns (*Penaeus esculentus*) Blue endeavour prawns (*Metapenaeus endeavouri*)		Low opening, otter prawn trawl systems	Trawling is generally in waters between 30 and 60 m deep, however can occur down to 100 m (DOEH, 2004).
				Fishing effort:	The DPIRD state of State of the Fisheries annual reports indicate that no fishing efforts occurred in 2022 and extremely low fishing effort occurred in 2021, 2020 and 2019. (Wilkin, et al. 2023b). The stock status of Western king prawns is considered sustainable-adequate (Kangas et al., 2023a).		
				Active licences/vessels:	No boats undertook trial fishing activities in 2022 (Wilkin, et al. 2023b).		
Exmouth Gulf Prawn Managed Fishery			✓	**Management area**	The Exmouth Gulf Prawn Managed Fishery operates within the sheltered waters of Exmouth Gulf. The fishery occupies a total area of 4000 km², with only half of this area being trawled (Fletcher and Santoro, 2015).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*)		The fishery uses low opening, otter prawn trawl systems (Kangas et.al., 2021c).	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Blue endeavour prawn (*Metapenaeus endeavouri*) Banana prawn (*Penaeus merguinensis*)		
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Exmouth Gulf Prawn Managed Fishery landed 898 t in 2022, 777 t in 2021, 673 t in 2020, 821 t in 2019, 880 t in 2018, 713 t in 2017 and 822 t in 2016. (Wilkin et al., 2023c) The total catch comprised of 411 t of brown tiger prawns, 218 t of western king prawns, and 269 t of blue endeavour prawns (Wilkin et al., 2023c). Stock status of landed species is considered sustainable-adequate (Kangas et al., 2023c).	
				Active licences/vessels:	The number of participation vessels is six. Approximately 126 people, including skippers and other crew were employed in 2022 (Wilkin et al., 2023c).	
Gascoyne Demersal Scalefish Managed Fishery			✓	**Management area**	The Gascoyne Demersal Scalefish Managed Fishery is located between the southern Ningaloo Coast to south of Shark Bay with a closure area at Point Maud to Tantabiddi (WAFIC[24]).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Pink snapper (*Chrysophrys auratus*) Goldband snapper (*Pristipomoides multidens*) Other demersal species caught include: • Tropical snappers, • Emperors, • Cods, • Mulloway Trevallies.	Mechanised handlines.	The target species inhabit waters deeper than 20m (Jackson et.al., 2021a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD:	

[24] https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="3"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="2">The Gascoyne Demersal Scalefish Managed Fishery reported a total commercial catch of 166 t in 2022, 164 t in 2020-21, 207 t in 2019-20, 173 t in 2018-19 and 210 t in 2017-18.
The total of commercial catches comprised 42 t of pink snapper, 83 t goldband snapper, and 41 t of other mixed species (Jackson et.al., 2023c).
The stock status for pink snapper is considered recovering, with goldband snapper considered sustainable-adequate (Jackson et.al., 2023c).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="2">Ten vessels fished during 2022, six of which fished for more than 10 days during peak pink snapper season (Jackson et.al., 2023c).</td></tr>
<tr><td rowspan="5">Kimberley Crab Managed Fishery (formerly Kimberley Developing Mud Crab Fishery)</td><td rowspan="5">✓</td><td rowspan="5"></td><td rowspan="5"></td><td>Management area</td><td colspan="2">Kimberley Crab Managed Fishery is one of two small trap-based crab fisheries that exist in the North Coast Bioregion between Cambridge Gulf and Broome (Gaughan and Santoro, 2018). In November 2018, the fishery transitioned from developing to fully managed (Johnston et al., 2020b).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Brown mud crab (Scylla olivacea)
Green mud crab (Scylla serrata)</td><td>Trap.
Exemption holders use crab traps and drop nets in waters adjacent to native title lands (Johnston et al., 2023).</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The total crab landed was 13.6 t in 2022, 9.7 t in 2021, 1.5 t in 2020, 3.2 t in 2018 and 7.4 t in 2019.
In 2022, Kimberley Crab Managed Fishery landed a total catch of 2.4 t of brown mud crab represented the entire reported commercial mud crab catch (Johnston et al., 2023a).
Mud crab species in the managed fishery is considered sustainable-adequate (Johnston et al., 2023a).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">There is an allocation of 1200 units (equivalent to 600 traps) to license holders (Johnston et al., 2023). An equivalent allocation of 600 traps for commercial purposes was provided to Traditional Owner groups through the granting of non-transferable Instruments of Exemption under the Fish Resources Management Act 1994.
Two people were employed in 2022 between August and Octobrt (Johnston et al., 2023a).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Nickol Bay Prawn Managed Fishery		✓		**Management area**	The Nickol Bay Prawn Managed Fishery operates in nearshore and offshore waters of the Pilbara region along the NWS. Trawling has been reported to occur at several locations along the Pilbara coast to the east of the Burrup Peninsula, including within the waters of Nickol Bay (Fletcher and Santoro, 2015).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Banana prawn (*Penaeus merguiensis*) Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*) Blue endeavour prawn (*Metapenaeus endeavouri*)		Low opening, otter prawn trawl systems	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Nickol Bay Prawn Managed Fishery landed 51 t in 2022, 123.4 t in 2021, 202.4 t in 2020, 254 t in 2019 and 81 t in 2018. (Wilkin, et al. 2023b) Of the total landings in 2022, landings were dominated by 42 t banana prawns and 7 t brown tiger, and 2 t Blue Endeavour (Wilkin, et al. 2023b). Fishing effort was 62 boat days, a decrease from 175 days in 2021 (Wilkin, et al. 2023b). The banana prawn stock status within the Nickol Bay Prawn Managed Fishery is considered sustainable-adequate (Wilkin, et al. 2023b).		
				Active licences/vessels:	There were three participating vessels in 2022 (Wilkin, et al. 2023b).		
Northern Demersal Scalefish Managed Fishery	✓			**Management area**	The Northern Demersal Scalefish Managed Fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman et al., 2018). Area 1 permits line fishing only, between the high-water mark and the 30 m isobath. Area 2 permits handline, dropline and fish trap fishing methods and is further divided into zones. Zone A is an inshore area, Zone B comprises the area with most historical fishing activity, and Zone C is an offshore deep slope area representing waters deeper than 200 m (Fletcher et al., 2017).		
				Species targeted		**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Goldband snapper (*Pristipomoides multidens*) Blue-spotted emperor (*Lethrinus punctulantus*) Red emperor (*Lutjanus sebae*) Rankin cod (*Epinephelus multinotatus*)	Handline, dropline and fish trap	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Northern Demersal Scalefish Managed Fishery landed 1,458 t in 2022, 1,544 t in 2021, 1,419 t in 2020, 1,507t in 2019, and 1,297 t in 2018. In 2022, the majority of the catch was landed from Zone B, with 1,235 t in 2022. The 2022 catch of jobfish group (*Pristipomoides spp*.) was 552 t, 91% of which was goldband snapper (Wakefield et al., 2023a). The stock status of landed species in the managed fishery is classified as sustainable-adequate (Wakefield et al., 2023a).	
				Active licences/vessels:	Eight active vessels in 2022 (Wakefield et al., 2023a).	
Octopus Interim Management Fishery	-	-	-	**Management area**	The Octopus Interim Management Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Octopus djinda, which is closely related to *Octopus tetricus.*	Primary method is baited octopus trap (combination of active trapping via trigger mechanisms, and passive trapping – shelter traps) (Hart et al., 2023d).	In inshore waters to a depth of 70 m (DPIRD, 2018a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Commercial catch for the Octopus Interim Management Fishery was 744 t in 2022, 487 t in 2021, 254 t in 2020, 453 t in 2019, 314 t in 2018, 257 t in 2017 and 252 t in 2016 (Hart et al., 2023g). In 2022, the total catch of octopus was 744 t live weight, which was 53% higher than 2021 with a total catch of 487 t (Hart et al., 2023g).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Octopus stock status in 2022 is considered sustainable-adequate (Hart et al., 2023g).		
				Active licences/vessels:	27 active vessels in 2022 (Hart et al., 2023g).		
Shark Bay Beach Seine and Mesh Net Managed Fishery	-	-	-	**Management area**	The Shark Bay Beach Seine and Mesh Net Managed Fishery operates from Denham.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Whiting *(*yellowfin *Sillago schomburgkii*) Sea mullet *(Mugil cephalus*) Tailor (*Pomatomus saltatrix*) Western yellowfin bream (*Acanthopagrus australis*)		Beach seine and mesh net.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Total catch was 131 t in 2022,135 t in 2021, 171 t in 2020, 175 t in 2019 and 176 t in 2018. Of the total catch in 2022, 78 t consisted of whiting, 25 t of sea mullet, 16 t of western yellowfin bream, 6 t of tailor, and 1.5 t of pink snapper (Jackson et al., 2023b). The stock status of targeted species is sustainable - adequate (Jackson et al., 2023b).		
				Active licences/vessels:	Five vessels were active in 2022 (Jackson et al., 2023b).		
Shark Bay Crab Managed Fishery	-	-	-	**Management area**	The Shark Bay Crab Managed Fishery operates within the NWMR. It is based primarily in Carnarvon but operates throughout the waters of Shark Bay.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus*)		Trap and trawl.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD:		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">The fishery landed 401 t in 2022, 549 t in 2020-21, 638 t in 2019-20, 529 t in 2018-19 and 518 t in 2017-18.
The fishery closed for a period of 18 months in 2012 and 2013 to promote stock recovery, following a series of adverse environmental conditions between 2010 and 2011 (Chandrapavan et al., 2023). Limited commercial fishing resumed under a national quota management system between 2013 and 2017 (Chandrapavan et al., 2023).
The current stock status is sustainable-adequate (Chandrapavan et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">In the trawl sector in 2022 there were 10 licenced vessels based in Carnarvon with an additional eight vessels traveling to Carnarvon. There were three trap vessels. (Chandrapavan et al., 2023a).</td></tr>
<tr><td rowspan="4">Shark Bay Prawn and Scallop Managed Fishery</td><td rowspan="4">-</td><td rowspan="4">-</td><td rowspan="4">-</td><td>Management area</td><td colspan="3">The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns. The Shark Bay Scallop Managed Fishery is usually Western Australia’s most valuable scallop fishery (Kangas et al., 2021b).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Western king prawn (Penaeus latisulcatus)
Brown tiger prawn (Penaeus esculentus)
Endeavour prawns (Metapenaeus endeavouri)
Coral prawns (Metapenaeopsis sp.)
Saucer scallop (Amusium balloti)</td><td>Low-opening otter trawls.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The Shark Bay Prawn Managed Fishery landed 831 t in 2022, 1,303 t in 2021, 1268 t in 2020, 1214 t in 2019, 1091 t in 2018 and 1608 t in 2017.
Of the total landings, 503 t comprised of western king prawn, 326 t of brown tiger prawn, and 2 t of blue endeavour prawn (Wilkin et al., 2023d).
The Shark Bay Scallop Managed Fishery has been managed under a quota management framework since the fishery reopened in 2015 (Kangas et al., 2021b). Scallop landings for Shark Bay were 35 t (177 t meat weight) in 2022, 123.6 t meat weight (618.2 t whole weight) in 2021, 177.1 t meat weight (885.5 t whole weight) in 2020 and 339 t meat weight (1,694 t whole weight) in 2019.
All stocks for target species are considered sustainable-adequate (Wilkin et al., 2023a).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	In the trawl sector in 2022 there were 10 licenced vessels based in Carnarvon with an additional eight vessels traveling to Carnarvon (Wilkin et al., 2023d). In the Shark Bay Scallop Managed Fishery there are boats licensed to take scallops (11 Class A licenses) and boats that also fish for prawns (18 Class B licenses). There were eight vessels. (Wilkin et al., 2023a).		
South Coast Crustacean Managed Fishery	-	-	-	**Management area**	The South Coast Crustacean Managed Fishery comprises four fisheries: the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Esperance Rock Lobster Managed Fishery, the Southern Rock Lobster Pot Regulation Fishery and the South Coast Deep-Sea Crab Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Southern rock lobster (*Jasus edwardsii*) Western rock lobster (*Panulirus cygnus*) Giant crab (*Pseudocarcinus gigas*) Crystal crab (*Chaceon albus*) Champagne crab (*Hypothalassia acerba*)		Pots.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Crustacean Managed Fishery reported a total catch of 23.8 t in 2022, 27.4 t in 2020-21, 52.5 t in 2019-20, 67.5 t in 2018-19 and 101.2 t in 2017-18 season. In 2022, the total crustacean landings comprised of champagne crabs (3.6 t), southern rock lobster (6.4 t), giant crabs (5.7 t), western rock lobster (5 t), and crystal crabs (3.1 t) (How, et al, 2023d). The stock status is sustainable-adequate (How and Wiberg, 2023b).		
				Active licences/vessels:	The South Coast Crustacean Managed Fishery is based on mobile vessels that employ a skipper and one to three crew. In 2022, there were nine participating vessels. (How, et al, 2023d).		
South Coast Purse Seine Managed Fishery	-	-	-	**Management area**	The South Coast Purse Seine Managed Fishery is active in coastal waters between Cape Leeuwin and the South Australia border. Landings are primarily off Albany, Bremer Bay and Esperance (Norriss and Blazeski, 2020). The managed fishery has five management zones: centred on King George Sound (Zone 1), Albany (Zone 2), Bremer Bay (Zone 3), Esperance (Zone 4) and a developmental zone near Cape Leeuwin (Zone 5) where catches have been negligible (Norriss and Blazeski et al., 2023a).		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Species targeted	**Fishing methods**	**Fishing depth**
				Small pelagic finfish. Australian sardine (pilchards, *Sardinops sagax*) Yellowtail scad (Trachurus novaezelandiae) Australian anchovy (*Engraulis australis*) Scaly mackerel (*Sardinella lemuru*) Maray (*Etrumeus jacksoniensis*). Entitled to take sandy sprat (*Hyperlophus vittatus*) and blue sprat (*Spratelloides robustus*), however not reported caught since 1993/94	Purse seine nets from vessels.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Purse Seine Managed Fishery landed 1,636 t in 2022, 1,255 t in 2020-21, 1498 t in 2019-20, 1064 t in 2018-19 and 2168 t in the 2017-18 season. The total catch in 2022, consisted of >99% of Australian sardines (Norriss and Blazeski et al., 2023c). Fishing effort in 2022 was 576 boat days. (Norriss and Blazeski et al., 2023c). The stock status for the Australian sardine is considered sustainable-adequate (Norriss and Blazeski et al., 2023c).	
				Active licences/vessels:	Seven active vessels in 2022 (Norriss and Blazeski et al., 2023c).	
South-west Trawl Managed Fishery	-	-	-	**Management area**	The South-west Trawl Managed Fishery is a multi-species fishery and includes two of WA's smaller scallop fishing grounds at Fremantle and north of Geographe Bay (Fairclough and Walters, 2018).	
				Species targeted	**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Scallops (*Ylistrum balloti,* formerly *Amusium balloti*) and associated by-products In years of low scallop catches licensees may use trawl gear to target fin-fish species.	Trawl.	Information not available.
				Fishing effort:	Catch levels are unavailable for recent years. The fishery was not active in 2015 or 2016 (Fairclough and Walters, 2018). Effort in the fishery is highly variable and typically fluctuates in response to recruitment variability in saucer scallops and prawns. In 2021 <1% of the allowable area was trawled in the South-west Trawl Managed Fishery (Kangas et al., 2023b). The stock status of scallops is considered sustainable-adequate (Wilkin et al., 2023a).	
				Active licences/vessels:	One vessel fished in 2022 (Wilkin et al., 2023a).	
The South Coast Salmon Managed Fishery	-	-	-	**Management area**	The South Coast Salmon Managed Fishery is one of two fisheries operating in the South Coast Bioregion that target nearshore and estuarine finfish.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Western Australian salmon (*Arripis truttaceus*) Southern school whiting (*Sillago bassensis*) Australian herring (*Arripis georgianus*) King George whiting (*Sillaginodes punctatus*) Sea mullet (*Mugil cephalus*) Estuary cobbler (*Cnidoglanis macrocephalus*) Black bream (*Acanthopagrus butcheri*)	Beach seines, haul nets and gill nets.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD:	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Total catch for the South Coast Estuarine and Nearshore Scalefish and Invertebrates Resource was 267.6 t for 2022, 275.1 t in 2021 and 334 t in 2020. Of this, the South Coast Salmon Managed Fishery landed 48.5 t of Western Australian salmon in 2021, 76 t in 2020 and 56.5 t in 2019. The stock status of target species is sustainable-adequate (Duffy et al., 2023b).		
				Active licences/vessels:	Catch was recorded against eight licences in 2022 (Duffy et al., 2023d).		
West Coast Beach (Beach Bait Fish Net) Managed Fishery	-	-	-	**Management area**	Primarily active in the Bunbury areas in the SWMR, operates between 26° and 33° S		
				Species targeted		**Fishing methods**	**Fishing depth**
				Whitebait		Beach-based haul nets.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total catch of whitebait in 2022 was 23.3 t, an increase from 21.3 t in 2021 (Duffy et al., 2023c). The fishery continues to be environmentally limited with stocks recovering from the 2010/11 marine heat wave (Duffy et al., 2023a). The stock status is inadequate – environmentally limited (Duffy et al., 2023c).		
				Active licences/vessels:	The number of active vessels in 2021 is unknown, however five licensees reported landings of whitebait in 2011 (Smith, et al., 2011)		
West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery	-	-	-	**Management area**	The West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery is part of the Temperate Demersal Gillnet and Demersal Longline Fishery, which operates between 26° and 33° S, and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery, which operates from 33° S to the WA/SA border (Braccini and Blay, 2020).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Gummy shark (*Mustelus antarcticus*) Dusky shark (*Carcharhinus obscurus*) Whiskery shark (*Furgaleus macki*)		Gillnet and longline.	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Sandbar shark (*C. plumbeus*) Scalefish are a byproduct.		
				Fishing effort:	Catches of elasmobranchs and fishing effort for the Temperate Demersal Gillnet and Demersal Longline Fishery peaked during the late 1980s and early 1990s and have stabilised at lower levels in recent years (Braccini and watt, 2021). Previous years values from State of the Fisheries annual reports provided by DPIRD: Estimated annual value to the fishery was $0.23 million for 2021-22, $0.17 million for 2020-21, $0.11 million for 2019-20, $0.2 million for 2018-19 and $0.3 million for 2017-18. Stock status for the gummy and whiskery shark is considered sustainable-adequate, with the dusky and sandbar shark status sustainable-recovering (Braccini and Rynvis. 2023).	
				Active licences/vessels:	Vessel and license data is not available. There were approximately 10 to 11 skippers and crew employed during 2020-22 period (Braccini and Rynvis. 2023).	
West Coast Demersal Scalefish Interim Managed Fishery	-	-	-	**Management area**	The West Coast Demersal Scalefish Interim Managed Fishery is the main commercial fishery that targets demersal species in the West Coast Bioregion. It encompasses the waters from just south of Shark Bay down to just east of Augusta and extends seaward to the 200 nm boundary. The fishery is divided into four inshore management areas and one offshore management area.	
				Species targeted	**Fishing methods**	**Fishing depth**
				The resource comprises over 100 species, including: • Baldchin groper (*Choerodon rubescens*) • Dhufish (*Glaucosoma hebraicum*) • Pink snapper *(Pagrus auratus*).	Lines.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The West Coast Demersal Scalefish Interim Managed Fishery retained 240 t in 2022, 259 t in 2021, 227 t in 2020, 254 t in 2019 and 230 t in 2018.	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Management commenced to recover stocks for the West Coast Demersal Scalefish Resource in 2008. Landings since 2008 have been below the stock recovery benchmark of 450 t (Fisher et al., 2023a).		
				Active licences/vessels:	30 licenced vessels operated in 2022 (Fisher et al., 2023a).		
West Coast Purse Seine Managed Fishery	-	-	-	**Management area**	Most of the catch in the West Coast Purse Seine Managed fishery are taken from between Cape Leeuwin and Geraldton. This region is separated into three zones (Northern Development Zone, Perth Metropolitan, and Southern Development zone (Norriss and Blazeski. 2023b).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Small pelagic finfish such as: Scaly mackerel (*Sardinella lemuru*) Pilchards (*Sardinops sagax*) Australian anchovy (*Engraulis australis*) Yellowtail scad (*Trachurus novaezelandiae*) Maray (*Etrumeus teres*)		Purse seine.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total combined catch taken by the West Coast Purse Seine Managed Fishery and developmental licensees was 259 t in 2022, 504 t in 2021, 493 t in 2020, 527 t in 2019 and 340 t in 2018. In 2022, the total catch consisted of 66% scaley mackerel and 31% Australian sardine (Norriss and Blazeski. 2023d). Both the scaley mackerel and Australian sardine have a stock status classified as sustainable-adequate (Norriss and Blazeski. 2023d).		
				Active licences/vessels:	Five active vessels in 2022 (Norriss and Blazeski. 2023d).		
West Coast Rock Lobster			✓	**Management area**	The West Coast Rock Lobster Fishery operates from Shark Bay south to Cape Leeuwin. The fishery is managed using zones, seasons and total allowable catch. The recreational fishery targets the western rock lobsters using baited pots and by diving between North-west Cape and Augusta.		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Managed Fishery				**Species targeted**	**Fishing methods**	**Fishing depth**
				Western rock lobster (*Panulirus cygnus)*	Baited pots.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total catch for the West Coast Rock Lobster Fishery was 6342 t in 2022. (De Lestang, S., and Walsh, A. 2023). Due to COVID-19 related logistics and marketing issues, the 2020-21 season was extended from 12 to 18 months. Since the current extended season is still in progress, data has been reported on a 12-month period (15 Jan 2021 – 14 Jan 2022) (How and Wiberg, L. 2023a). Landings for the 12-month (2021-22) season was 6,334 t and the 18-month 2020-21 season was 9,132 t. Commercial landings over the traditional 12-month season (15 Jan 2020- 14 Jan 2021) were 5,696 t. The fishery landed 6397 t in 2019 and 6400 t in 2018 and 2017. The stock status for the western rock lobster is classified as sustainable-adequate (How and Wiberg, 2023a).	
				Active licences/vessels:	218 vessels were active in the 2022 season (De Lestang, S., and Walsh, A. 2023).	

12.2.1.1 Fish Habitat Protection Areas

Fish Habitat Protection Areas (FHPA's) are areas of special protection and management in Western Australian waters. They are established in areas identified as having a particular value for the protection of fish and their habitats, education and/or aquaculture and which is considered to require a higher level of protection than other parts of the marine environment (DPIRD, 2013). They are set under section 115 of the *Fish Resources Management Act 1994* (WA) for the following purposes:

- the conservation and protection of fish, fish breeding areas, fish fossils or the aquatic eco-system,
- the culture and propagation of fish and experimental purposes related to that culture and propagation; or
- the management of fish and activities relating to the appreciation or observation of fish.

Under the Act, fish can include a range of organisms including finfish, crustaceans, molluscs, corals, seagrass and algae at all stages of their life cycles. FHPAs and a marine reserve declared under the *Conservation and Land Management Act 1984* (WA) cannot exist in the same area (DPIRD, 2013).

Management of an FHPA is designed and carried out to achieve the purposes outlined in a Plan of Management. FHPAs may restrict non-fishing related activities, such as the use of anchors, if they are considered to be inconsistent with the purpose of the FHPA; for example, if there is a risk to damage of fragile marine formations such as coral reefs. Protection may also involve the management of human activities such as dredging, draining of wetlands, and fishing or diving near sensitive marine habitats (DPIRD, 2013). Western Australia has six FHPA's (four within the NWMR and 2 within the SWMR):

- Abrolhos Islands
- Kalbarri Blue Holes
- Miaboolya Beach
- Point Quobba
- Cottesloe Reef
- Lancelin Island Lagoon.

FHPAs within the NWMR

Abrolhos Islands

The Houtman Abrolhos Islands (Abrolhos) is an archipelago of up to 210 small islands and associated reefs located approximately 65-90 km offshore from Geraldton, Western Australia (WA) (Evans *et. al*, 2022). The Abrolhos FHPA includes all waters from the high-water mark of the Abrolhos Islands out to three nautical miles; an area of about 2500 km^2 (Evans *et. al,* 2022).

The islands and waters of the Abrolhos are of significance for both land based (e.g., seabird breeding, migratory shorebirds, carpet pythons, tammar wallabies, and significant flora and vegetation) and marine based values (e.g., diverse and unique range of fish and marine aquatic species, significant commercial and recreational fisheries, aquaculture and marine tourism) (Evans et al., 2022). The reefs of the Abrolhos are extremely diverse, with approximately 184 species of coral, 295 species of marine algae and 389 species of fish (Evans et al., 2022).

The Abrolhos Includes specific regulations such as:

- temporal (seasonal) closures (e.g., closed season for baldchin groper, *Choerodon rubescens*, between the 1st of November and 31st of January),
- spatial closures (e.g., Reef Observation Areas (ROAs) ~64.3km^2 or 2.6% of Abrolhos FHPA),

- recreational fishing specific bag and possession limits (Evans et al., 2022).

The marine state territorial waters of the Abrolhos continue to be managed by the Department of Primary Industries and Regional Development.

Kalbarri Blue Holes

The Blues Holes form part of an inshore coastal limestone reef system to the west of the town of Kalbarri. The northern boundary of the FHPA is located immediately west of the northern end of the Blue Holes car park and extends south from this point for approximately 420 m. The width of the FHPA varies from around 130 m wide at the southern end, to approximately 140 m wide at the northern end (DoF, 2007).

The Kalbarri Blue Holes FHPA includes part of a near-shore limestone reef system, which stretches intermittently from Red Bluff in the South to the Murchison River Mouth in the North (DoF, 2007). To First Nations people, access to the reef system – near to the river mouth – is likely to have made it a significant site for hunting fish and gathering seafood. The river mouth beside Kalbarri, is called 'Wudumalu' or 'Wutumalu' by the local Nhanda language group (DoF, 2014a).

The reef provides a base for a range of recreational activities including swimming, scuba diving and snorkelling. There is an abundance of finfish, shellfish, crustaceans, corals, seagrasses and sponges living there. There are up to 70 species of finfish, 10 types of sponge, and 11 species of coral found in the reef system (DoF, 2014a).

Regulations for protection of Kalbarri Blue Holes include:

- All marine life is protected, and no fishing activities are permitted.
- The use of all motorised vessels (boats and jet skis) is prohibited within the FHPA's waters (DoF, 2014a).

Miaboolya Beach

Miaboolya Beach is an area of the Gascoyne River delta near Carnarvon. The FHPA covers the nearshore waters and extends north to South Bejaling and south to the northern side of the Gascoyne River mouth. In addition, it includes the adjoining mangrove system, associated seasonal creeks and salt marshes (DoF, 2003).

The Miaboolya system has regional importance as a fish nursery and general fish habitat. Native fauna includes juvenile finfish species such as tailor (*Pomatomus saltatrix*), mulloway (*Argyrosomus spp.*) and sand whitin308iliate*ago ciliata*), and various crab species including mud crabs, blue swimmer and green mud crabs (family *Portunidae*). The fish and crab stocks use this environment for breeding, growth and development. Resident and migratory populations of birds, marine turtles and dolphins also exist within the area and contribute to its environmental value (DoF, 2003).

The Miaboolya area is of important cultural and historical value to the Gnulli native title group. The area is a place for traditional food collection and gathering for social occasions (DoF, 2003).

Recreational fishing is permitted however there are restrictions in place by the Department of Fisheries (DoF, 2014b).

Point Quobba

The Point Quobba FHPA adjoins the well-known 'Blowholes' tourist attraction at Quobba Station, 75 km north-west of Carnarvon WA, at the northernmost point of Shark Bay (DoF, 2004).

The marine life and habitats of the area are of considerable scientific and recreational interest and are highly valued in the local community. However, the area is at risk from a high level of use and conflict between users, due to the area's proximity to popular tourism sites, the boat ramp, camping and settlement areas (DoF, 2004).

The marine habitat at Point Quobba is in a transition zone between tropical and temperate climatic zones and is therefore highly diverse. It contains a mix of endemic temperate south-west Australian

species and tropical and temperate Indo-Pacific species. The FHPA provides relatively sheltered breeding and feeding habitat for more than 100 species (DoF, 2015)

Point Quobba lies within the traditional area of the Baiyungu people, who are members of the Gnulli Group. The Baiyungu people use the area regularly, sometimes to collect trochus for consumption at Point Quobba and Black Rock (DoF, 2004).

There is a designated 'restricted area' within the FHPA to protect vulnerable habitats and fish species from human activity. Within this area commercial and recreational fishing and jet-skiing are prohibited. Restrictions on fishing in the rest of the FHPA are defined by the Department of Fisheries (DoF, 2015).

FHPAs within the SWMR

Cottesloe Reef

The Cottesloe reef system stretches intermittently for approximately 4.4 km from a point 300 m south of the artificial surfing reef at the Cable Station to North Street, Cottesloe. It is located on a limestone shelf, which is known locally as the Cottesloe Fringing Bank. This shelf extends approximately 1.5 km offshore from the beach. Limestone pinnacles, elevated platforms, and water-eroded limestone outcrops form most of the surface reef structure. In places, sea-grass patches and kelp beds occur within 100 m of the shoreline (DoF, 2001a).

The reef is readily accessible to the public and intensively used by locals and other Perth metropolitan residents and is therefore vulnerable to human impacts. The reef system and its waters are highly popular for recreational activities including surfing, windsurfing, swimming, paddle skiing, line fishing, spear fishing, snorkelling and scuba diving.

The Cottesloe Reef system contains a unique and diverse range of marine habitats. These include sand, sand with seagrass, limestone reef with large kelp and macroalgae, sponge beds and garden bottoms. In deeper water, corals, sea cucumbers and sponge gardens thrive and the slope of the reef platform at Mudurup Rocks provides habitat for animals such as feather stars and small molluscs, which are protected from heat and drying during low summer tides. An abundance of finfish can be found in and around the reef system, including herring, tailor, skipjack (silver trevally), whiting, morwong and tarwhine (silver bream). The reef is also a breeding ground for squid, Port Jackson sharks and other elasmobranchs including stingrays (DoF, 2001a; DoF 2010).

Regulations for protection of Cottesloe Reef include:

- Spearfishing is prohibited throughout the FHPA.
- Commercial fishing is prohibited throughout the FHPA.
- Recreational fishing (except net fishing) for fish such as tailor, herring, whiting, skipjack and garfish is permitted in the FHPA, subject to recreational fishing rules for the West Coast region.
- Anchoring of any craft in the FHPA is prohibited.
- Five yellow moorings have been provided within the FHPA for use by boats up to 12 m. These moorings are removed during winter (April – November) to prevent damage from winter storms (DoF, 2010).

Lancelin Island Lagoon

Lancelin Island is an emergent limestone feature of the coastal marine environment of the mid-west coast of Western Australia. The island is located approximately 110 km north of Perth and 800 m offshore from the Lancelin town site (DoF, 2001b).

The Lancelin Island Lagoon is a small area of reef habitat on the western side of Lancelin Island and a popular snorkelling and diving destination. Water depth ranges from less than 0.3 m on the intertidal reefs to less than 3 m on the sand or seagrass-covered bottom. The area has a diverse array of benthic marine habitat. During a marine survey of the area, over 200 flora and fauna species

were positively identified, with more remaining unidentified due to the diversity of species (DoF, 2001a).

The management strategy for the Lancelin Island Lagoon includes the following regulations:

- Prohibit all recreational and commercial fishing, aquaculture and collecting in the FHPA.
- Prohibit boat anchorage within the FHPA.
- Investigate the means to prohibit mining and exploration within the FHPA and in adjacent areas where the environmental values of the FHPA may be compromised (DoF, 2001a).

12.2.2 Aquaculture

Aquaculture operations in the northwest are typically restricted to inland and shallow coastal waters.

West Coast Bioregion

Aquaculture activities in the West Coast bioregion, defined by the Department of Primary Industries and Regional Development (DPIRD) (as the government body responsible management of primary industries in WA) are focused on blue mussels and edible oysters (mainly in Cockburn Sound) and marine algae for production of beta-carotene, used as a food additive and as a nutritional supplement. Offshore marine finfish production is also being developed, initially focusing on yellowtail kingfish near Geraldton.

There is also an emerging black pearl industry (from the *Pinctada margaritifera* oyster) in the Abrolhos Islands. As well as expansion in the production of Akoya pearls (small white pearls from *Pinctada fucata martensi*), *Pinctada albina* (small, yellow pearls) and *Pteria penguin*, which are often used to produce half (mabe) pearls in pink and bluish shades.

Aquaculture licences for producing coral and live rock (pieces of old coral reefs colonised by marine life, such as beneficial bacteria, for aquariums) at the Abrolhos Islands have also been issued and other applications are being assessed (DPIRD, 2023).

Gascoyne Coast Bioregion

In the Gascoyne Coast bioregion, aquaculture activities are focused on the blacklip oyster (*Pinctada margaritifera*) and Akoya pearl oyster (*Pinctada imbricata*) (Gaughan and Santoro, 2020). Several hatcheries supply *P. margaritifera* juveniles to the region's developing black pearl farms.

Other aquaculture developments in the Gascoyne Coast bioregion include emerging producers of coral and live rock species for aquariums (DPIRD, 2023).

North Coast Bioregion

Aquaculture activities in the North Coast bioregion is dominated by the production of pearls (from the *Pinctada margaritifera* oyster). A large number of pearl oysters for seeding are obtained from wild stocks and supplemented by hatchery produced oysters, with major hatcheries operating at Broome and around the Dampier Peninsula (DPIRD, 2023). Primary spawning of the pearl oyster occurs from mid-October to December. A smaller secondary spawning occurs in February and March (Gaughan and Santoro, 2020).

Finfish aquaculture in the Kimberley region is dominated by Barramundi located in the Kimberley Aquaculture Development Zone which lies approximately 200 km north-east of Broome. Rock oyster trials are nearing completion near Karratha in the Pilbara region, however there is no commercial production of the species in this region at this stage (DPIRD, 2023).

There is one indigenous project at One Arm Point that operates a marine hatchery that focuses on a variety of ornamental and edible marine species (DPIRD, 2023).

South Coast Bioregion

Aquaculture activities in the South Coast bioregion is dominated by the production of edible oysters (Akoya and rock oysters) and mussels within King George Sound in Albany. Other forms of private aquaculture in the region include sea cage farming of abalone, which are restricted to the South Coast near Augusta (Flinders Bay) and Esperance (Wylie Bay) (DPIRD, 2023).

12.3 Fisheries – Traditional

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

Dugong, fish and marine turtles that move between coastal and Commonwealth waters are important components of the First Nations people's culture and diet. First Nations people continue to actively manage their sea country in coastal waters of WA in order to protect and manage the marine environment, its resources and cultural values.

Indonesian fishers can fish within designated areas under the Australia-Indonesia Memorandum of Understanding regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974 (MoU 74). Traditional fishing is allowed within the MoU Box (Figure 12-9), which encompasses: Ashmore Reef (Pulau Pasir), Cartier Island (Pulau Baru), Seringapatam Reef (Afringan), Scott Reef (Pulau Dato) and Browse Island (Berselan). Restrictions have since been introduced around Ashmore Reef and Cartier Island following their designation as Nature Reserves under the Commonwealth's *National Parks and Wildlife Conservation Act 1975* in 1983 and 2000, respectively.

The MoU allows Indonesian fishers to fish in designated areas using traditional methods only. These methods include reef gleaning, free-diving, hand lining and other non-mechanised methods. Scott Reef is currently the principal reef in the MoU 74 Box and is utilised seasonally by Indonesian fishers to harvest trepang, trochus shells and other reef species. The peak season is July to October due to more favourable wind conditions, and to allow fishers to sun dry their catch on their boat decks (ERM, 2009). Browse Island is also frequently visited by shark fishers who mostly fish along the eastern margin of the MoU 74 Box.

The Agreement between the Government of Australia and the Government of the Republic of Indonesia Relating to Cooperation in Fisheries (*1992 Fisheries Cooperation Agreement*) provides the framework for fisheries and marine cooperation between Australia and Indonesia. Cooperation under the Agreement today takes place under the auspices of the Working Group on Marine Affairs and Fisheries. Research reports on reef top species in the MoU Box indicate that stocks in the area are severely depleted. In 2009 the Working Group on Marine Affairs and Fisheries agreed to a Roadmap for MoU Box Cooperative Management (DAWE, 2020a).

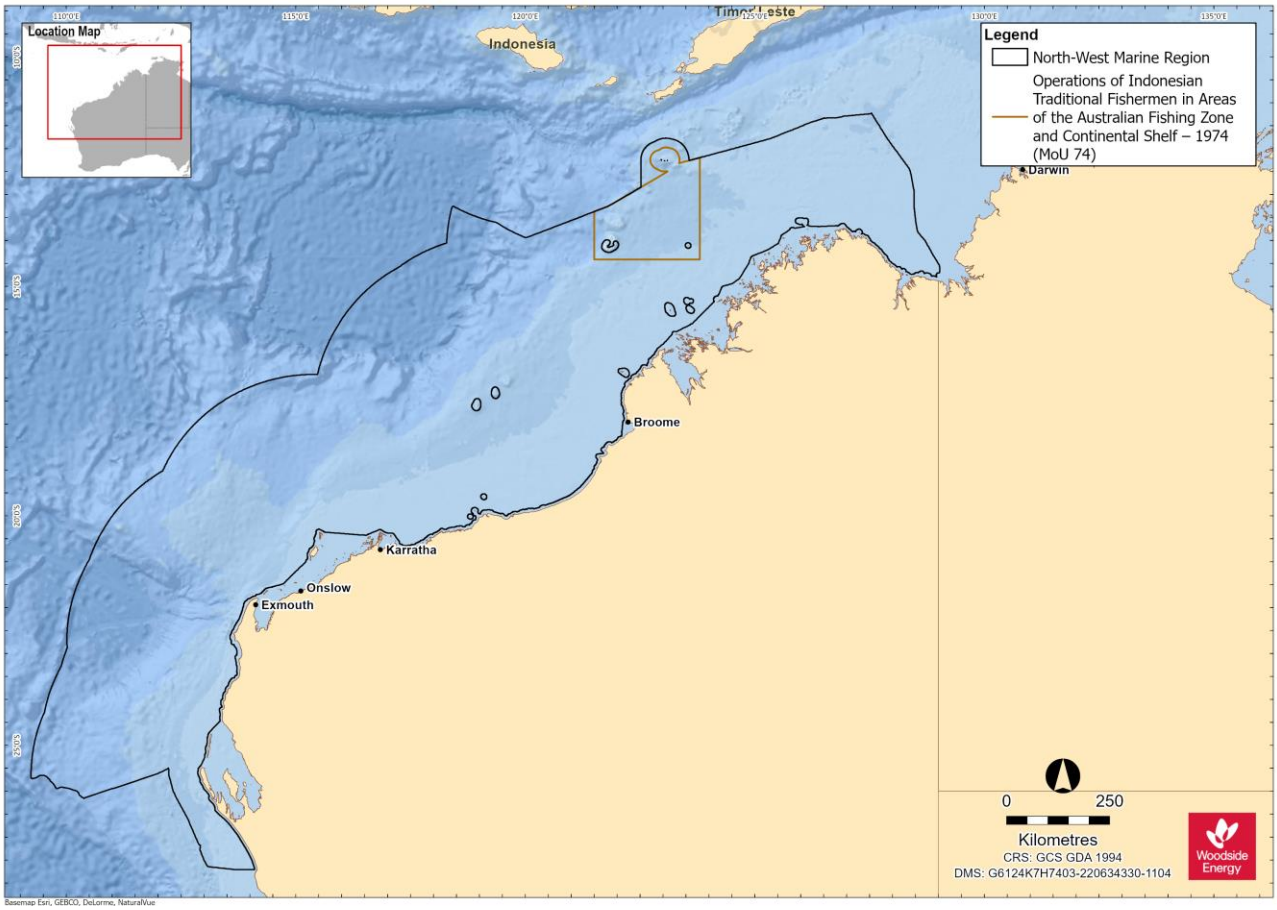


Figure 12-9: MOU 74 Box. Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974

12.4 Tourism and Recreation

Western Australia's tourism sector is important to industry and the economy. In 2022-2023, tourism accounted for 6.8% of WA's total jobs and generated a Gross Total Value Added of $11.9 billion (Tourism Western Australia, 2024a).

The Kimberley, Pilbara and Gascoyne regions are popular visitor destinations for Australian and international tourists. Tourism is concentrated in the vicinity of population centres including Broome, Dampier, Exmouth, Coral Bay and Shark Bay. Recreational and tourism activities include: charter fishing, recreational fishing, diving, snorkelling, marine fauna watching, and yachting (Tourism Western Australia, 2024b).

Australia's Coral Coast and North West had a 27% and 22% growth respectively, in intrastate spend compared to 2019. The state's highest intrastate spend on record occurred with WA residents spending $9.3 billion on trips within the state (Tourism Western Australia, 2024b).

12.4.1 Gascoyne Region

Tourism has the fourth largest economic output of all the major industries of the Gascoyne region (GDC, 2023). It contributes significantly to the local economy in terms of both income and employment. In 2022, the region had over 271,100 overnight visitors and tourism had an average economic output of $182 million between 2021 and 2022 (GDC, 2023).

The COVID-19 pandemic disrupted the tourism industry of the Gascoyne region in previous years, particularly by reducing availability of the overseas workforce. However, the phasing out of restrictions has increased interstate and international travel, and visitor numbers have remained high with inter-state tourism numbers increasing in 2021 in comparison to 2020 (GDC, 2022). The main

attraction of the coastline for tourists is the quality of marine life. The region supports extensive scuba diving, snorkelling and fishing and specialised eco-tourism activities include whale shark and manta ray observation at Ningaloo, and dolphin and dugong viewing in Shark Bay (Newman et al., 2023b). In 2018-19, the Ningaloo region (Ningaloo Reef and the surrounding coastal region Exmouth Gulf, communities of Exmouth and Coral Bay, and adjacent proposed southern coastal reserves and pastoral leases) contributed an estimated $110 million in value added to the WA economy (DCBA, 2020). Ningaloo's economic contribution to WA is attributed to four key types of economic activity, tourism expenditure by international, interstate and WA visitors to the Ningaloo region, commercial fishing in the Exmouth Gulf, recreation activity involving the Reef by residents of the Ningaloo region and management and research relating to the Reef (DCBA, 2020). More than 90% of this value added is attributed to the domestic and international tourists who visit Ningaloo each year (DCBA, 2020). Dark sky tourism flourished in 2023 with an influx of visitors coming together in Exmouth to witness a rare hybrid solar eclipse (GDC, 2023). The natural phenomena brought 1,000's of visitors both interstate and international to the region in April 2023.

The first Cultural Tourism experience was launched in 2022 on the Ningaloo Coast. Departing from Coral Bay, the Cultural Tour provides visitors the opportunity to experience a unique perspective on the coastline's rich cultural heritage and unique environment. The main marine nature-based tourist activities are concentrated around and within the Ningaloo WHA (GDC, 2022). The Aboriginal AstroTourism Project was launched where First Nations people were consulted on night sky constellations and trained in dark sky tourism. Through this program star gazing experiences were successfully delivered to approximately 665 visitors over 10 nights during the Ningaloo Eclipse (GDC, 2023).

12.4.2 Pilbara region

Recreation and tourism activities within the Pilbara are of high social value. Tourism is a key economic driver for the Pilbara with more than 1 million visitors to the region every year. Tourism visitation continued to grow in 2022, with the number of visitors to Karajini National Park in 2022 having doubled in comparison to 2020 (PDC, 2022). Multi-year tourism infrastructure development funding has been provided for the Niminjarra Highway to provide easier access to the Karlamilyi National Park and enhance cultural tourism opportunities and to the Whim Creek Hotel to re-establish a tourism destination between Karratha and Hedland (PDC, 2023).

Recreational fishing within the Pilbara region tends to be concentrated in State waters adjacent to population centres. Recreational fishing is known to occur around the Dampier Archipelago with boats launched from boat ramps around Dampier and Karratha. Once at sea, charter vessels may also frequent the waters surrounding the Montebello Islands (Williamson et al., 2006).

12.4.3 Kimberley Region

Tourism is one of the main industries in the Kimberley region, alongside resources, construction, agriculture and retail (KDC, 2022).

Recreation and tourism activities in the Kimberley region occur predominantly in WA State waters (extending offshore 3 nm from the mainland), adjacent to coastal population centres (e.g. Broome), with a peak in activity during the winter months (dry season). These activities include recreational fishing, diving, snorkelling, wildlife watching and boating (Newman et al., 2023b.

Primary dive locations in the Kimberley region include the Rowley Shoals, including Mermaid Reef AMP, Scott Reef, Seringapatam Reef, Ashmore Reef AMP and Cartier Island (Newman et al., 2023b).

12.5 Shipping

Commercial shipping traffic is high within the NWMR with vessel activities including commercial fisheries, tourism such as cruises, international shipping and oil and gas operations. There are 12 ports adjacent to the NWMR, including the major ports of Dampier, Port Hedland and Broome,

which are operated by their respective port authorities. These ports handle large tonnages of iron ore and petroleum exports in addition to salt, manganese, feldspar chromite and copper (DEWHA, 2008).

Heavy vessel traffic exists within the Pilbara Port Authority management area which recorded 9,594 vessel movements in the Port of Dampier, 6,786 vessel movements in the Port of Port Hedland, and 807 vessel movements in the Port of Ashburton in the 2022/23 reporting period (PPA, 2023). Twenty-six designated anchorages for bulk carriers, petroleum and gas tankers, drilling rigs, offshore platforms, and pipelay vessels are located offshore of Rosemary Island.

In 2012, AMSA established a network of shipping fairways off the northwest coast of Australia. The shipping fairways, while not mandatory, aim to reduce the risk of collision between transiting vessels and offshore infrastructure. The fairways are intended to direct large vessels such as bulk carriers and LNG ships trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure (AMSA, 2013).

12.6 Petroleum Basins

The NWMR supports a number of industries including petroleum exploration and production.

Within the NWMR there are seven sedimentary petroleum basins: Northern and Southern Carnarvon basins, Perth, Browse, Roebuck, Offshore Canning and Bonaparte basins (GA, 2023). Of these, the Northern Carnarvon, Browse and Bonaparte basins hold large quantities of gas and comprise most of Australia's reserves of natural gas (DEWHA, 2008), which is reflected by the level of development in the area. In addition to existing facilities, there are proposed developments in the region. This includes proposals to develop gas and condensate from a number of fields within the NWMR.

In addition to the oil and gas industry, other land-based industries depend upon the marine environment in the nearshore area. These include ports, salt mines such as Karratha and Onslow, LNG onshore processing facilities such as Burrup Hub, Thevenard Island, Barrow Island, Varanus Island, and small-scale desalination plants at Barrow Island, Burrup, Cape Preston, and Onslow.

12.7 Defence

Key Australian Department of Defence (DoD) operational areas and facilities areas of the NWMR for training and operational activities, include:

- An operating logistics base has been established in Dampier to support vessels patrolling the waters around offshore oil and gas facilities. A dedicated navy administrative support facility is also being constructed at the nearby township of Karratha (DEWHA, 2008).
- The Taylor Barracks are the headquarters of the Pilbara regiment, one of three Regional Force Surveillance Units conducting surveillance and reconnaissance of remote areas of northern Australia. This base is located in Karratha (DoD, n.d.).
- The Royal Australian Air Force currently maintains two 'bare bases' in remote areas of WA that are used for military exercises. One of these is the Royal Australian Air Force Base in Learmonth. The Royal Australian Air Force maintains the Commonwealth Heritage listed Learmonth Air Weapons Range Facility, which is located between Ningaloo Station and the Cape Range National Park. The air training area associated with the Learmonth base extends over the offshore region.
- The Royal Australian Air Force Base Curtin is located on the north coast of WA, south-east of Derby and 170 km east of Broome. It provides support for land, air and sea operations aimed to support Australia's northern approaches.
- The Naval Communications Station Harold E. Holt is located ~6 km north of Exmouth. The main role of the station is to communicate at very low frequencies (19.8 kHz) with Australian and United States submarines and ships in the eastern Indian Ocean and the western Pacific Ocean (DEWHA, 2008).

- Areas may be subject to Unexploded Ordnance (UXO) as a result of military activities. These are offshore sites where ammunition and explosives have been dumped, or which have been used as live bombing or firing ranges. Defence maintains a record of sites confirmed as, or reasonably suspected of being affected by UXO. There are several suspected UXO sites in the NWMR (Australian Government Defence, n.d.).

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APPENDIX A. PROTECTED MATTER SEARCH REPORTS FOR NWMR, SWMR AND NMR

The PMST tool conducts searches on a grid-based function. Accordingly, the PMST results can indicate features or species that do not actually intersect or have a presence in the area. To validate search results, comprehensive literature and scientific expertise is used. As such, only species considered relevant to the scope of this document have been described.

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Jun-2024

Figure 1: NWMR PMST subarea 1

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	5
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	9
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	105
Listed Migratory Species:	97

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	65
Commonwealth Heritage Places:	5
Listed Marine Species:	174
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	78
Regional Forest Agreements:	None
Nationally Important Wetlands:	8
EPBC Act Referrals:	317
Key Ecological Features (Marine):	13
Biologically Important Areas:	92
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Shark Bay, Western Australia	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Eighty-mile beach	Within Ramsar site
Roebuck bay	Within 10km of Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris		
Great Knot [862]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Malurus leucopterus leucopterus White-winged Fairy-wren (Dirk Hartog Island), Dirk Hartog Black-and-White Fairy-wren [26004]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
[Zanda latirostris listed as Calyptorhynchus latirostris](#) Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat likely to occur within area
FISH		
[Milyeringa veritas](#) Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
[Ophisternon candidum](#) Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Bettongia lesueur Barrow and Boodie Islands subspecies](#) Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area
[Bettongia lesueur lesueur](#) Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat known to occur within area
[Bettongia penicillata ogilbyi](#) Woylie [66844]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Isoodon auratus barrowensis Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus bernieri Rufous Hare-wallaby (Bernier Island) [66662]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus Central Australian subspecies Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Lagorchestes hirsutus dorreae Rufous Hare-wallaby (Dorre Island) [66663]	Vulnerable	Species or species habitat known to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Species or species habitat known to occur within area
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Osphranter robustus isabellinus Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Perameles bougainville Shark Bay Bandicoot [278]	Endangered	Species or species habitat known to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys fieldi Shark Bay Mouse, Djoongari, Alice Springs Mouse [113]	Vulnerable	Species or species habitat likely to occur within area
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Trichosurus vulpecula arnhemensis](#) Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
[Xeromys myoides](#) Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
PLANT		
[Caladenia barbarella](#) Small Dragon Orchid, Common Dragon Orchid [68686]	Endangered	Species or species habitat may occur within area
[Caladenia hoffmanii](#) Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area
[Eucalyptus beardiana](#) Beard's Mallee [18933]	Vulnerable	Species or species habitat likely to occur within area
[Minuria tridens](#) Minnie Daisy [13753]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Ctenotus zastictus](#) Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Lerista nevinae Nevin's Slider [85296]	Endangered	Species or species habitat known to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat known to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat known to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Breeding likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area
SPIDER		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat known to occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Acrocephalus orientalis](#) Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area
[Calidris pugnax as Philomachus pugnax](#) Ruff [91256]		Roosting known to occur within area
[Calidris ruficollis](#) Red-necked Stint [860]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - EXMOUTH VLF TRANSMITTER STATION [50122]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - LEARMONTH - RAAF BASE [50106]	WA
Defence - LEARMONTH - RAAF BASE [50109]	WA
Defence - LEARMONTH - RAAF BASE [50108]	WA
Defence - LEARMONTH - RAAF BASE [50101]	WA
Defence - LEARMONTH - RAAF BASE [50107]	WA
Defence - LEARMONTH - RAAF BASE [50097]	WA
Defence - LEARMONTH - RAAF BASE [50103]	WA
Defence - LEARMONTH - RAAF BASE [50100]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA
Defence - YAMPI SOUND TRAINING AREA [50145]	WA
Unknown	
Commonwealth Land - [51698]	WA
Commonwealth Land - [51699]	WA
Commonwealth Land - [51707]	WA
Commonwealth Land - [51704]	WA
Commonwealth Land - [51696]	WA
Commonwealth Land - [51705]	WA
Commonwealth Land - [51709]	WA
Commonwealth Land - [51700]	WA
Commonwealth Land - [51706]	WA

Commonwealth Land Name	State
Commonwealth Land - [52110]	WA
Commonwealth Land - [51695]	WA
Commonwealth Land - [51671]	WA
Commonwealth Land - [52104]	WA
Commonwealth Land - [51672]	WA
Commonwealth Land - [51670]	WA
Commonwealth Land - [51055]	WA
Commonwealth Land - [51054]	WA
Commonwealth Land - [51702]	WA
Commonwealth Land - [51053]	WA
Commonwealth Land - [51708]	WA
Commonwealth Land - [51703]	WA
Commonwealth Land - [52198]	WA
Commonwealth Land - [51716]	WA
Commonwealth Land - [52236]	WA
Commonwealth Land - [52099]	WA
Commonwealth Land - [52097]	WA
Commonwealth Land - [51719]	WA
Commonwealth Land - [52100]	WA
Commonwealth Land - [52195]	WA
Commonwealth Land - [52109]	WA
Commonwealth Land - [52098]	WA
Commonwealth Land - [51710]	WA
Commonwealth Land - [51714]	WA
Commonwealth Land - [51715]	WA
Commonwealth Land - [52106]	WA
Commonwealth Land - [52107]	WA

Commonwealth Land Name	State
Commonwealth Land - [51947]	WA
Commonwealth Land - [52108]	WA
Commonwealth Land - [52105]	WA
Commonwealth Land - [52103]	WA
Commonwealth Land - [52102]	WA
Commonwealth Land - [52101]	WA
Commonwealth Land - [51404]	WA
Commonwealth Land - [51403]	WA
Commonwealth Land - [51668]	WA
Commonwealth Land - [51666]	WA
Commonwealth Land - [51667]	WA
Commonwealth Land - [51718]	WA
Commonwealth Land - [51720]	WA
Commonwealth Land - [51717]	WA
Commonwealth Land - [51712]	WA
Commonwealth Land - [51713]	WA
Commonwealth Land - [51711]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Mermaid Reef - Rowley Shoals	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place
Scott Reef and Surrounds - Commonwealth Area	EXT	Listed place
Yampi Defence Area	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans		
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus		
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus		
Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Gallinago megala		
Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura		
Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus fuscus Dusky Sea Snake [1119]		Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Indopacetus pacificus](#) Longman's Beaked Whale [72]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Abrolhos	Habitat Protection Zone (IUCN IV)
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Dampier	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Kimberley	Habitat Protection Zone (IUCN IV)

Park Name	Zone & IUCN Categories
Kimberley	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Roebuck	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)
Abrolhos	National Park Zone (IUCN II)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Dampier	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Kimberley	National Park Zone (IUCN II)
Mermaid Reef	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)
Abrolhos	Special Purpose Zone (IUCN VI)
Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		

Scientific Name	Behaviour	Presence
[Natator depressus](#)		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
[Chelonia mydas](#)		
Green Turtle [1765]	Nesting	Known to occur
May - Jul		
[Lepidochelys olivacea](#)		
Olive Ridley Turtle [1767]	Nesting	Known to occur
Nov-Feb		
[Caretta caretta](#)		
Loggerhead Turtle [1763]	Nesting	Known to occur
Nov - May		
[Eretmochelys imbricata](#)		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Adele Island	Nature Reserve	WA
Airlie Island	Nature Reserve	WA
Bardi Jawi	Indigenous Protected Area	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Management Area	WA
Barrow Island	Marine Park	WA
Bedout Island	Nature Reserve	WA
Bernier And Dorre Islands	Nature Reserve	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Cape Range (South)	National Park	WA

Protected Area Name	Reserve Type	State
Coulomb Point	Nature Reserve	WA
Dambimangari	Indigenous Protected Area	WA
Dirk Hartog Island	National Park	WA
Eighty Mile Beach	Marine Park	WA
Faure Island	Private Nature Reserve	WA
Francois Peron	National Park	WA
Freycinet, Double Islands etc	Nature Reserve	WA
Gnandaroo Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA
Hamelin Pool	Marine Nature Reserve	WA
Jarrkunpungu	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Karajarri	Indigenous Protected Area	WA
Koks Island	Nature Reserve	WA
Lacepede Islands	Nature Reserve	WA
Lalang-garram / Camden Sound	Marine Park	WA
Lalang-garram / Horizontal Falls	Marine Park	WA
Little Rocky Island	Nature Reserve	WA
Locker Island	Nature Reserve	WA
Lowendal Islands	Nature Reserve	WA
Miaboolya Beach	Fish Habitat Protection Area	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA
Muiron Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Muiron Islands	Marine Management Area	WA
Nanga Station	NRS Addition - Gazettal in Progress	WA
Ningaloo	Marine Park	WA
North Kimberley	Marine Park	WA
North Lalang-garram	Marine Park	WA
North Sandy Island	Nature Reserve	WA
North Turtle Island	Nature Reserve	WA
Nyangumarta Warrarn	Indigenous Protected Area	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA
Rocky Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Rowley Shoals	Marine Park	WA
Scott Reef	Nature Reserve	WA
Sedimentary Deposits Reserve	5(1)(g) Reserve	WA
Serrurier Island	Nature Reserve	WA
Shark Bay	Marine Park	WA
Swan Island	Nature Reserve	WA
Tanner Island	Nature Reserve	WA
Tent Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA28968	5(1)(h) Reserve	WA
Unnamed WA36909	5(1)(h) Reserve	WA
Unnamed WA36913	Nature Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed WA37168	5(1)(h) Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA37338	5(1)(h) Reserve	WA
Unnamed WA37383	5(1)(h) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40828	5(1)(h) Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA
Unnamed WA41080	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA
Unnamed WA44667	5(1)(h) Reserve	WA
Unnamed WA44669	5(1)(h) Reserve	WA
Unnamed WA44672	5(1)(h) Reserve	WA
Unnamed WA44673	5(1)(h) Reserve	WA
Victor Island	Nature Reserve	WA
Whalebone Island	Nature Reserve	WA
Yawuru	Indigenous Protected Area	WA
Yawuru Nagulagun / Roebuck Bay	Marine Park	WA
Y Island	Nature Reserve	WA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cape Range Subterranean Waterways	WA
Eighty Mile Beach System	WA
Exmouth Gulf East	WA
Hamelin Pool	WA
Leslie (Port Hedland) Saltfields System	WA
Mermaid Reef	EXT
Shark Bay East	WA
Yampi Sound Training Area	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Cockatoo Island Multi-User Supply Base, WA	2017/7986		Assessment
Gorgon Gas Development	2003/1294		Post-Approval
Koolan Island Operations	2022/09392		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
Midwest Offshore Wind Farm	2022/09264		Assessment
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Ocean Barramundi Expansion Project	2022/09272		Assessment
Optimised Mardie Solar Salt Project	2022/9169		Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Ridley Magnetite Project	2023/09477		Referral Decision
Action clearly unacceptable			
Asian Renewable Energy Hub Revised Proposal, WA	2021/8891	Action Clearly Unacceptable	Completed
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Anketell Point Iron Ore Processing & Export Port	2009/5120	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Balmoral South Iron Ore Mine	2008/4236	Controlled Action	Post-Approval
Binowee Iron Ore Project	2001/366	Controlled Action	Proposed Decision
Browse FLNG Development, Commonwealth Waters	2013/7079	Controlled Action	Post-Approval
Cape Lambert Port B Development	2008/4032	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Construction and operation of a Solar Salt Project, SW Onslow, WA	2016/7793	Controlled Action	Assessment Approach
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of an iron ore mine and associated infrastructure	2010/5630	Controlled Action	Assessment Approach
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Eramurra Industrial Salt Project	2021/9027	Controlled Action	Assessment Approach
Eramurra Industrial Salt Project, near Karratha, WA	2019/8448	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Iron ore mine	2006/2522	Controlled Action	Post-Approval
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Mardie Project, 80 km south west of Karratha, WA	2018/8236	Controlled Action	Post-Approval
Mauds Landing Marina	2000/98	Controlled Action	Completed
Nava-1 Cable System	2001/510	Controlled Action	Completed
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pluton Irvine Island Iron Ore Project	2011/6064	Controlled Action	Proposed Decision
Port Hedland Outer Harbour Development and associated marine and terrestrial in	2008/4159	Controlled Action	Post-Approval
Port Hedland Spoilbank Marina, WA	2019/8520	Controlled Action	Post-Approval
Proposed West Pilbara Iron Ore Project	2009/4706	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Shark Bay Resources Dredging	2020/8717	Controlled Action	Post-Approval
Shark Bay Salt Facilities upgrade for direct ocean disposal of bitterns discharge	2011/5984	Controlled Action	Completed
Simpson Development	2000/59	Controlled Action	Completed
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Torosa South Initial Appraisal Drilling	2007/3500	Controlled Action	Completed
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Yannarie Solar Salt Project	2004/1679	Controlled Action	Completed
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Aquaculture - Barramundi grow out, Yampi Sound	2005/2476	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
archaeological surveys & excavation at historic sites, Cape Inscription	2006/3027	Not Controlled Action	Completed
Baniyas-1 Exploration Well, EP-424, near Onslow	2007/3282	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Cape Lambert Port A Marine Structures Refurbishment Project	2018/8370	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Construction of a Commodities Berth, Wharf and Associated Infrastructure	2008/4129	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Development of iron ore facilities	2013/7013	Not Controlled Action	Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	Not Controlled Action	Completed
Drilling between Kalbarri and Cliff Head	2005/2185	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Expansion of Monkey Mia Resort	2003/1146	Not Controlled Action	Completed
Expansion of the Sino Iron Ore Mine and export facilities, Cape Preston, WA	2017/7862	Not Controlled Action	Completed
Expansion Proposal, Mineralogy Cape Preston Iron Ore Project, Cape Preston, WA	2009/5010	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Extension of Simpson Oil Platforms & Wells	2002/685	Not Controlled Action	Completed
Extention to the existing Blind Strait Black Lip Pearl Oyster Farm	2004/1342	Not Controlled Action	Completed
Gulf Fishing Lodge	2010/5499	Not Controlled Action	Completed
Hadda 1,Flying Foam 1,Magnat 1 exploration drill	2004/1697	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Huascaran-1 exploration well (WA-292-P)	2001/539	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Koolan Island Mine - Reconstruction of seawall and capital dewatering of mine pit,130km northwest of	2016/7848	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235	Not Controlled Action	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA	2014/7160	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Port Hedland Channel Risk and Optimisation Project, WA	2017/7915	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Rail and Port Facilities	2001/474	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telfer Gold Mine Project - Mine and Borefield Extensions and Upgrade of Storage	2002/787	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152	Not Controlled Action	Completed
Walkway Lighting Upgrade	2009/4965	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
2 geotechnical surveys - preliminary and final	2006/2886	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic Survey - Maxima 3D MSS	2006/2945	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
Acacia East Pit Cutback Mining Project,northern Kimberley, WA	2013/6752	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Cape Preston East - Iron Ore Export Facilities, Pilbara, WA	2013/6844	Not Controlled Action (Particular Manner)	Post-Approval
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Conduct an exploration drilling campaign	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Dredging of marine sediment to enable construction of eight berths and a turnin	2010/5678	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Endurance 3D Marine Seismic Data Acquisition Survey	2007/3667	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Geoscience Australia - Marine survey in Browse Basin to acquire data to assist assessment of CO2 sto	2013/6747	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Gigas 2D Pilot Ocean Bottom Cable Marine Seismic Survey	2007/3839	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Koolama 2D Seismic Survey Dampier Basin	2010/5420	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine Geotechnical Drilling Program	2008/4012	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	Not Controlled Action (Particular Manner)	Post-Approval
Millstream 20GL Pipeline, Bungaroo, Borefield Integration	2012/6379	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Nelson Point Dredging	2009/4920	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Outer Canning exploration drilling program off NW coast of WA	2012/6618	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Phoenix 3D Seismic Survey, Bedout Sub-Basin	2010/5360	Not Controlled Action (Particular Manner)	Post-Approval
Pilot Appraisal Well - Torosa South 1	2008/3991	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Port Headland Outer Harbour Pre-construction Pilling program	2012/6341	Not Controlled Action (Particular Manner)	Post-Approval
Port of Port Hedland channel marker replacement project, WA	2017/8010	Not Controlled Action (Particular Manner)	Post-Approval
Port Walcott upgrade, dredging & spoil disposal, & channel realignment	2006/2806	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Repsol 3d & 2D Marine Seismic Survey	2012/6658	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Rosebud 3D Marine Seismic Survey in WA-30-R and TR/5	2012/6493	Not Controlled Action (Particular Manner)	Post-Approval
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Sampling of Stromatolites, additional sites, Mamelin Pool,WA	2013/7071	Not Controlled Action (Particular Manner)	Post-Approval
Sampling of Stromatolites and Sediments	2012/6307	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Scarborough Development nearshore component, NWS, WA	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval
Schild MC3D Marine Seismic Survey	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval
Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval
Scott Reef Seismic Research	2006/2647	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Torosa-5 Apraisal Well, WA-30-R	2008/4430	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Tridacna 3D Ocean Bottom Cable Marine Seismic Survey	2011/5959	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
upgrade of 3 community recreation sites	2005/2349	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Useless Loop Port Maintenance Works and Infrastructure Upgrade	2009/4791	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Veritas Voyager 2D Marine Seismic Survey	2009/5151	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Woodside Southern Browse 3D Seismic Survey, WA	2007/3534	Not Controlled Action (Particular Manner)	Post-Approval
Zeemeermin MC3D seismic survey, Browse Basin, Offshore WA	2009/5023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Aurora extension MC3D Marine Seismic Survey	2011/5887	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Experimental Study of Behavioural and Physiological Impact on Fish of Seismic Ex	2006/2625	Referral Decision	Completed
Mardie Salt Project, Pilbara region, WA	2018/8183	Referral Decision	Completed
Outer Harbour Development and associated marine and terrestial infrastructure	2008/4148	Referral Decision	Completed
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Tidal Power Generation Turbine	2009/5235	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Ancient coastline at 90-120m depth	South-west
Canyons linking the Argo Abyssal Plain with the Scott Plateau	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west
Wallaby Saddle	North-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging likely	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging likely	Known to occur

Scientific Name	Behaviour	Presence
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Migration likely	Known to occur
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging	Likely to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Migration	Known to occur
Dugong dugon Dugong [28]	Migration likely	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Migration corridor	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Migration corridor	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Migration corridor	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
River shark		
Pristis clavata Dwarf Sawfish [68447]	Foraging	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Juvenile	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Nursing	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Pupping	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Pristis pristis Freshwater Sawfish [60756]	Nursing	Likely to occur
Pristis pristis Freshwater Sawfish [60756]	Nursing	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Pupping	Likely to occur
Pristis zijsron Green Sawfish [68442]	Foraging	Known to occur
Pristis zijsron Green Sawfish [68442]	Nursing	Known to occur
Pristis zijsron Green Sawfish [68442]	Pupping	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high	Known to occur

Scientific Name	Behaviour	Presence
	numbers)	
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Resting	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Rhincodon typus Whale Shark [66680]	Foraging (high density prey)	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur

Scientific Name	Behaviour	Presence
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Jun-2024

NWMR PMST sub area 2 (North area)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	8
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	53
Listed Migratory Species:	64

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	1
Listed Marine Species:	107
Whales and Other Cetaceans:	27
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	7
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	14
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	118
Key Ecological Features (Marine):	7
Biologically Important Areas:	57
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Natural		
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Ashmore reef national nature reserve	Within Ramsar site
Ord river floodplain	Within 10km of Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species		[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica menzbieri		
Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti		
Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding known to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat may occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		

Scientific Name	Threatened Category	Presence Text
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat known to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Varanus mitchelli		
Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki		
Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Breeding known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Migratory Marine Species		

Scientific Name	Threatened Category	Presence Text
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Unknown	
Commonwealth Land - [52278]	ACI
Commonwealth Land - [52276]	ACI
Commonwealth Land - [52277]	ACI

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Ashmore Reef National Nature Reserve	EXT	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area overfly marine area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Anous minutus Black Noddy [824]		Breeding known to occur within area
Anous stolidus Common Noddy [825]		Breeding known to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Phaethon rubricauda		
Red-tailed Tropicbird [994]		Breeding known to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]		Breeding known to occur within area
Sula dactylatra		
Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster		
Brown Booby [1022]		Breeding known to occur within area
Sula sula		
Red-footed Booby [1023]		Breeding known to occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Bhanotia fasciolata		
Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Aipysurus fuscus Dusky Sea Snake [1119]		Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)

Park Name	Zone & IUCN Categories
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Ashmore Reef	Recreational Use Zone (IUCN IV)
Ashmore Reef	Sanctuary Zone (IUCN Ia)
Cartier Island	Sanctuary Zone (IUCN Ia)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Balanggarra	Indigenous Protected Area	WA
Browse Island	Nature Reserve	WA
Dambimangari	Indigenous Protected Area	WA
Lalang-garram / Camden Sound	Marine Park	WA
Lesueur Island	Nature Reserve	WA
Low Rocks	Nature Reserve	WA
Niiwalarra Islands	National Park	WA
North Kimberley	Marine Park	WA
North Lalang-garram	Marine Park	WA

Protected Area Name	Reserve Type	State
Pelican Island	Nature Reserve	WA
Prince Regent	National Park	WA
Unnamed WA41775	5(1)(h) Reserve	WA
Unnamed WA44677	5(1)(h) Reserve	WA
Uunguu	Indigenous Protected Area	WA

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Ashmore Reef	EXT

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
Project Crux Cable Lay and Operation	2022/09441		Completed
Project Fitzroy Expansion Offshore Cable Lay	2023/09674		Referral Decision
Controlled action			
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Audacious Oil Field Standalone Development	2001/407	Controlled Action	Completed
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed
Decommissioning of Challis Oilfield	2003/942	Controlled Action	Post-Approval
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well	2002/755	Controlled Action	Post-Approval
Prelude Floating Liquefied Natural Gas Facility and Gas Field Development	2008/4146	Controlled Action	Post-Approval
PTTEP AA Floating LNG Facility	2011/6025	Controlled Action	Completed
Not controlled action			
2D seismic survey, exploration permit NT/P67	2004/1587	Not Controlled Action	Completed
2D Seismic Survey in Permit Areas WA-318-P & WA-319-P, near Cape Londonderry	2004/1687	Not Controlled Action	Completed
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
AEC International Hydrocarbon Well Puffin 6	2000/36	Not Controlled Action	Completed
Audacious-3 oil drilling well	2003/1042	Not Controlled Action	Completed
Backpacker-1 Offshore Hydrocarbon Exploration Well	2001/300	Not Controlled Action	Completed
Coot-1 hydrocarbon exploration well, Permit Area AC/L2 or AC/L3	2001/296	Not Controlled Action	Completed
Crux-A and Crux-B appraisal wells, Petroleum Permit Area AC/P23	2006/2748	Not Controlled Action	Completed
Crux gas-liquids development in permit AC/P23	2006/3154	Not Controlled Action	Completed
Drilling of 12 Hydrocarbon Exploration Wells, Permit Area WA-371-P	2006/3005	Not Controlled Action	Completed
Drilling of exploration well Audacious-1 in AC/P17	2000/5	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Drilling of Marina-1 Exploration Well	2007/3586	Not Controlled Action	Completed
Echuca Shoals-2 Exploration of Appraisal Well	2006/3020	Not Controlled Action	Completed
Exploration Drilling in AC/P17, AC/P18 and AC/P24	2001/359	Not Controlled Action	Completed
Exploration Well AC/P23	2001/234	Not Controlled Action	Completed
Kaleidoscope exploration well	2001/182	Not Controlled Action	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed
Montara-3 Offshore Hydrocarbon Exploration Well Permit Area AC/RL3	2001/489	Not Controlled Action	Completed
Nexus Drilling Program NT-P66	2007/3745	Not Controlled Action	Completed
P30 Hydrocarbon Exploration Well	2001/293	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Puffin Oil wells 7, 8 & 9 development	2005/2336	Not Controlled Action	Completed
Saucepan 1 Exploration Well ACP23	2000/2	Not Controlled Action	Completed
Skua and Swift Oilfields	2006/3195	Not Controlled Action	Completed
Strumbo-1 Gas Exploration Well Permit Area WA-288-P	2002/884	Not Controlled Action	Completed
Thresher-1 Well	2000/84	Not Controlled Action	Completed
Not controlled action (particular manner)			
2 (3D) Marine Seismic Surveys	2009/4994	Not Controlled Action (Particular Manner)	Completed
2D and 3D Seismic Survey	2011/6197	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
2D and 3D Seismic Survey WA-405-P	2009/5104	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2008/4133	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey within permit area WA-318-P	2007/3879	Not Controlled Action (Particular Manner)	Post-Approval
2D or 3D Marine Seismic Survey in Petroleum Permit Area AC/P35	2009/4864	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Marine Survey	2001/363	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D Marine Seismic Survey, Permit AC/P 23	2005/2364	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, petroleum exploration permit AC/P33	2006/2918	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey of AC/P4, AC/P17 and AC/P24	2006/2857	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey WA-406-P Bonaparte Basin	2007/3904	Not Controlled Action (Particular Manner)	Post-Approval
AC/P37 3D Seismic Survey Ashmore Cartier	2007/3774	Not Controlled Action (Particular Manner)	Post-Approval
Auralandia 3D marine seismic survey	2011/5961	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Bassett 3D Marine Seismic Survey	2010/5538	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Seismic and Bathymetric Survey	2012/6295	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Canis 3D Marine Seismic Survey	2008/4492	Not Controlled Action (Particular Manner)	Post-Approval
Cartier East and Cartier West 3D Marine Seismic Surveys	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Conduct an exploration drilling campaign	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of Audacious-5 appraisal well	2008/4327	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of Exploration & Appraisal Wells Braveheart-1 & Cornea-3	2009/5160	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of two appraisal wells	2011/5840	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Campaign	2011/6047	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Exploration Drilling Campaign, Browse Basin, WA-341-P, AC-P36 and WA-343-P	2013/6898	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling in Permit Areas WA-402-P & WA-403-P	2010/5297	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Fishburn2D Marine Seismic Survey	2012/6659	Not Controlled Action (Particular Manner)	Post-Approval
Floyd 3D and Chisel 3D Seismic Surveys	2011/6220	Not Controlled Action (Particular Manner)	Post-Approval
Gicea 3D Marine Seismic Survey	2008/4389	Not Controlled Action (Particular Manner)	Post-Approval
Gold 2D Marine Seismic Survey Permit Areas WA375P and WA376P	2009/4698	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Malita West 3D Seismic Survey WA-402-P and WA-403-P	2007/3936	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey 2012	2012/6310	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval
NT/P80 2010 2D Marine Seismic Survey	2010/5487	Not Controlled Action (Particular Manner)	Post-Approval
Octantis 3D Marine Seismic Survey, Permit Area AC/P41 off northern Western Australia	2007/3369	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval
Sandalford 3D Seismic Survey	2012/6261	Not Controlled Action (Particular Manner)	Post-Approval
Santos Petrel-7 Offshore Appraisal Drilling Programme (Bonaparte Basin)	2011/5934	Not Controlled Action (Particular Manner)	Post-Approval
Schild MC3D Marine Seismic Survey	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval
Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Searcher bathymetry & geochemical seismic survey, Brawse Basin,Timor Sea,WA	2013/6980	Not Controlled Action (Particular Manner)	Post-Approval
Sonar and Acoustic Trials	2001/345	Not Controlled Action (Particular Manner)	Post-Approval
Songa Venus Drilling and Testing Operations	2009/5122	Not Controlled Action (Particular Manner)	Post-Approval
Thoar 3D Marine Seismic Survey	2010/5668	Not Controlled Action (Particular Manner)	Post-Approval
Tiffany 3D Seismic Survey	2010/5339	Not Controlled Action (Particular Manner)	Post-Approval
Tow West Atlas wreck from present location to boundary of EEZ	2010/5652	Not Controlled Action (Particular Manner)	Post-Approval
Ursa 3D Marine Seismic Survey	2008/4634	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Zeppelin 3D Seismic Survey	2011/6148	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Nova 3D Seismic Survey, WA 442-NT/P81, Joseph Bonaparte Gulf	2013/6820	Referral Decision	Completed
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	North-west
Carbonate bank and terrace system of the Sahul Shelf	North-west
Continental Slope Demersal Fish Communities	North-west
Pinnacles of the Bonaparte Basin	North
Pinnacles of the Bonaparte Basin	North-west
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Breeding	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Significant habitat	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Significant habitat - unknown behaviour	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Likely to occur
Chelonia mydas Green Turtle [1765]	Mating	Likely to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Likely to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur

Scientific Name	Behaviour	Presence
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 11-Jul-2024

Figure 1: NMR PMST area

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	82
Listed Migratory Species:	82

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	6
Commonwealth Heritage Places:	None
Listed Marine Species:	145
Whales and Other Cetaceans:	25
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	21
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	25
Regional Forest Agreements:	None
Nationally Important Wetlands:	7
EPBC Act Referrals:	80
Key Ecological Features (Marine):	10
Biologically Important Areas:	26
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Melanodryas cucullata melvillensis Tiwi Islands Hooded Robin, Hooded Robin (Tiwi Islands) [67092]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pluvialis squatarola		
Grey Plover [865]	Vulnerable	Roosting known to occur within area
Probosciger aterrimus macgillivrayi		
Palm Cockatoo (Australian) [67033]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat known to occur within area
Tyto novaehollandiae melvillensis		
Tiwi Masked Owl, Tiwi Islands Masked Owl [26049]	Endangered	Species or species habitat known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat may occur within area
MAMMAL		
Antechinus bellus		
Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat known to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Hipposideros semoni Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180]	Vulnerable	Species or species habitat may occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area
Mesembriomys gouldii melvillensis Black-footed Tree-rat (Melville Island) [87619]	Vulnerable	Species or species habitat known to occur within area
Mesembriomys gouldii rattoides Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat [87620]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Notomys aquilo		
Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area
Petrogale concinna canescens		
Nabarlek (Top End) [87606]	Endangered	Species or species habitat may occur within area
Phascogale pirata		
Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat likely to occur within area
Rhinolophus robertsi		
Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat [87639]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus		
Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sminthopsis butleri		
Butler's Dunnart [302]	Vulnerable	Species or species habitat known to occur within area
Trichosurus vulpecula arnhemensis		
Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat known to occur within area
Xeromys myoides		
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Bruguiera x hainesii		
Haines's Orange Mangrove [91351]	Critically Endangered	Species or species habitat may occur within area
Burmannia championii listed as Burmannia sp. Bathurst Island (R.Fensham 1021)		
[93461]	Endangered (listed as Burmannia sp. Bathurst Island	Species or species habitat likely to occur within area
Calophyllum bicolor		
[11371]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dendrobium bigibbum Cooktown Orchid [10306]	Vulnerable	Species or species habitat likely to occur within area
Dendrobium carronii listed as Cepobaculum carronii an orchid [10822]	Vulnerable	Species or species habitat likely to occur within area
Dendrobium johannis Chocolate Tea Tree Orchid [13585]	Vulnerable	Species or species habitat likely to occur within area
Elaeocarpus miegei [65147]	Endangered	Species or species habitat may occur within area
Tarennoidea wallichii [65173]	Endangered	Species or species habitat likely to occur within area
Typhonium jonesii a herb [62412]	Endangered	Species or species habitat likely to occur within area
Typhonium mirabile a herb [79227]	Endangered	Species or species habitat likely to occur within area
Vappodes phalaenopsis Cooktown Orchid [78894]	Vulnerable	Species or species habitat likely to occur within area
Xylopia monosperma a shrub [82030]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat likely to occur within area
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Cryptoblepharus gurrmul Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area
Elseya lavarackorum Gulf Snapping Turtle [67197]	Endangered	Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki		
Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Glyphis glyphis		
Speartooth Shark [82453]	Critically Endangered	Species or species habitat known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sterna sumatrana Black-naped Tern [800]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
[Dugong dugon](#) Dugong [28]		Species or species habitat known to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
[Isurus oxyrinchus](#) Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis as Sousa chinensis](#) Australian Humpback Dolphin [87942]		Breeding known to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
[Cecropis daurica](#) Red-rumped Swallow [80610]		Species or species habitat known to occur within area
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat may occur within area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Attorney-General - Australian Government Solicitor	
Commonwealth Land - Australian Government Solicitor [70332]	NT
Defence	
Defence - MT GOODWIN RADAR SITE [70063]	NT
Defence - QUAIL ISLAND BOMBING RANGE [70003]	NT

Commonwealth Land Name	State
Defence - RIMBIJA ISLAND RAAF RADIO BEACON [70074]	NT
Unknown	
Commonwealth Land - [71140]	NT
Commonwealth Land - [70995]	NT

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Sterna sumatrana Black-naped Tern [800]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Cosmocampus maxweberi Maxweber's Pipefish [66209]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus macrorhynchus Whiskered Pipefish, Ornate Pipefish [66222]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippichthys spicifer Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus zebra Zebra Seahorse [66241]		Species or species habitat may occur within area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Microphis brachyurus Short-tail Pipefish, Short-tailed River Pipefish [66257]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		

Scientific Name	Threatened Category	Presence Text
[Dugong dugon](#) Dugong [28]		Species or species habitat known to occur within area
Reptile		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Crocodylus johnstoni](#) Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
[Emydocephalus annulatus](#) Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis caerulescens Dwarf Sea Snake [1103]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis melanosoma Black-banded Robust Sea Snake [1109]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis vorisi Estuarine Sea Snake [25927]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Laticauda colubrina Yellow-lipped Sea Krait [1092]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Microcephalophis gracilis as Hydrophis gracilis Graceful Small-headed Sea Snake, Slender Sea Snake [87375]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Parahydrophis mertoni Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Limmen	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Habitat Protection Zone (IUCN IV)
Wessel	Habitat Protection Zone (IUCN IV)
West Cape York	Habitat Protection Zone (IUCN IV)
Arafura	Multiple Use Zone (IUCN VI)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)

Park Name	Zone & IUCN Categories
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Gulf of Carpentaria	National Park Zone (IUCN II)
Oceanic Shoals	National Park Zone (IUCN II)
West Cape York	National Park Zone (IUCN II)
West Cape York	National Park Zone (IUCN II)
Arafura	Special Purpose Zone (IUCN VI)
Arnhem	Special Purpose Zone (IUCN VI)
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
West Cape York	Special Purpose Zone (IUCN VI)
Arafura	Special Purpose Zone (Trawl) (IUCN VI)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)
Wessel	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles

[Resource Information]

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Dermochelys coriacea Leatherback Turtle [1768]	Nesting	Known to occur
May - Jul		

Scientific Name	Behaviour	Presence
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Nesting	Known to occur

Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Anindilyakwa	Indigenous Protected Area	NT
Barranyi (North Island)	National Park	NT
Crocodile Islands Maringa	Indigenous Protected Area	NT
Crocodile Islands Maringa	Indigenous Protected Area	NT
Dhimurru	Indigenous Protected Area	NT
Djelk	Indigenous Protected Area	NT
Djelk - Stage 2	Indigenous Protected Area	NT
Eight Mile Creek	Fish Habitat Area (A)	QLD
Finucane Island	National Park	QLD
Garig Gunak Barlu	Marine Park	NT
Keep River	Proposed National Parks Act park or park addition	NT
Limmen	National Park	NT
Limmen Bight	Marine Park	NT
Marthakal	Indigenous Protected Area	NT
Morning Inlet - Bynoe River	Fish Habitat Area (A)	QLD

Protected Area Name	Reserve Type	State
Nassau River	Fish Habitat Area (A)	QLD
Nijinda Durlga	Indigenous Protected Area	QLD
Pine River Bay	Fish Habitat Area (A)	QLD
Pungalina - Seven Emu	Private Nature Reserve	NT
Rutland Plains	Nature Refuge	QLD
South-East Arnhem Land	Indigenous Protected Area	NT
Thuwathu/Bujimulla	Indigenous Protected Area	QLD
Thuwathu/Bujimulla	Indigenous Protected Area	QLD
Yanyuwa (Barni - Wardimantha Awara)	Indigenous Protected Area	NT

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cobourg Peninsula System	NT
Finniss Floodplain and Fog Bay Systems	NT
Jardine River Wetlands Aggregation	QLD
Limmen Bight (Port Roper) Tidal Wetlands System	NT
Northeast Karumba Plain Aggregation	QLD
Southeast Karumba Plain Aggregation	QLD
Southern Gulf Aggregation	QLD

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Arnhem Space Centre Operations (Down Range Recovery)	2023/09657		Assessment
Aurukun Bauxite Project	2020/8624		Assessment
Darwin Pipeline Duplication (DPD) Project	2022/09372		Post-Approval
Darwin Pipeline Duplication DPD Project	2022/9166		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Tiwi H2 Project	2022/09347		Assessment
Controlled action			
Andranangoo Creek & Lethbridge Bay mineral sand mining	2005/2155	Controlled Action	Completed
Bauxite Hill Mining and Barging Project	2015/7538	Controlled Action	Post-Approval
Bauxite Hills Mine and Port Project	2012/6246	Controlled Action	Completed
Blacktip Project - Wharf Construction	2007/3293	Controlled Action	Completed
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Darwin to Moomba Gas Pipeline	2001/213	Controlled Action	Completed
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
Hardwood Plantation	2001/229	Controlled Action	Post-Approval
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Pisolite Hills bauxite mine and associated infrast	2008/4046	Controlled Action	Completed
PNG-Qld Gas Pipeline - Gove Lateral	2006/2615	Controlled Action	Completed
Roper Bar Iron Ore Mine and Transport Infrastructure	2011/6079	Controlled Action	Completed
Shipping Channel Enhancement	2010/5431	Controlled Action	Completed
Snake Bay Barramundi Sea Cage Farm	2005/2150	Controlled Action	Completed
South of the Embley Bauxite Mine Extension, including Construction of Port and Infrastructure	2008/4435	Controlled Action	Completed
South of the Embley Bauxite Mining Project	2010/5642	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Tassie Shoal Gas Reforming and Methanol Production Plants - NT/P48	2000/108	Controlled Action	Post-Approval
Tassie Shoal LNG Project	2003/1067	Controlled Action	Post-Approval
Trans-territory Gas Pipeline	2003/1186	Controlled Action	Completed
Not controlled action			
2D seismic survey, exploration permit NT/P67	2004/1587	Not Controlled Action	Completed
2D Seismic Survey in Permit Areas WA-318-P & WA-319-P, near Cape Londonderry	2004/1687	Not Controlled Action	Completed
Barossa-1 (NT/P69), Caldita-2 (NT/P61) exploration wells	2006/2793	Not Controlled Action	Completed
Caldita-1 Hydrocarbon Exploration Well, NT/P61	2004/1854	Not Controlled Action	Completed
Construction and operation of Radar Infrastructure	2004/1406	Not Controlled Action	Completed
Cox Peninsular Remediation Project, NT	2015/7587	Not Controlled Action	Completed
Dredging of Weipa South Channel	2003/1311	Not Controlled Action	Completed
Eastern Leases 2010 Exploration Drilling Program	2010/5455	Not Controlled Action	Completed
Geo-scientific survey	2005/2004	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed
Nexus Drilling Program NT-P66	2007/3745	Not Controlled Action	Completed
NT/P68 2007 Two Well Drilling Program	2007/3569	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D and 3D Seismic Survey	2011/6197	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey, Permit Area Q23P	2009/4925	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey - Petroleum Exploration Area NT/P68, Eastern Bonaparte Basin	2006/2922	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2009/4681	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey	2006/2729	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2006/2980	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2008/4121	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 3D & 2D Seismic Survey, in NT/P82, Timor Sea	2012/6398	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Bonaparte Basin Barossa Appraisal Drilling Campaign, NT	2012/6481	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Basin Seabed Mapping Survey	2009/4951	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Seismic and Bathymetric Survey	2012/6295	Not Controlled Action (Particular Manner)	Post-Approval
Caldita 3D Marine Seismic Survey - NT/P61, NT/P69, and acreage release area NT06-5	2006/3142	Not Controlled Action (Particular Manner)	Post-Approval
Dredging the outer shipping channels of Darwin Harbour	2013/6988	Not Controlled Action (Particular Manner)	Post-Approval
Eni Bathurst 3D Seismic Survey	2011/6118	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling in Permit Areas WA-402-P & WA-403-P	2010/5297	Not Controlled Action (Particular Manner)	Post-Approval
Joseph Bonaparte Gulf Seabed mapping survey	2010/5517	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Malita West 3D Seismic Survey WA-402-P and WA-403-P	2007/3936	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey 2012	2012/6310	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval
NT/P74 & NT/P75 - 2D marine seismic survey	2008/4316	Not Controlled Action (Particular Manner)	Post-Approval
NT/P77 3D Marine Seismic Survey	2009/4683	Not Controlled Action (Particular Manner)	Post-Approval
NT/P80 2010 2D Marine Seismic Survey	2010/5487	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Panda NT/P76 3D Seismic Acquisition Survey Program	2009/4992	Not Controlled Action (Particular Manner)	Post-Approval
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval
Removal of Potential Unexploded Ordnance within NAXA	2012/6503	Not Controlled Action (Particular Manner)	Post-Approval
Santos Petrel-7 Offshore Appraisal Drilling Programme (Bonaparte Basin)	2011/5934	Not Controlled Action (Particular Manner)	Post-Approval
Sonar and Acoustic Trials	2001/345	Not Controlled Action (Particular Manner)	Post-Approval
Sunshine Infill 2D and Mimosa 2D Marine Seismic Surveys	2009/4699	Not Controlled Action (Particular Manner)	Post-Approval
Two dimensional (2d) seismic survey in Gulf of Carpentaria	2013/6991	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
3D Seismic Survey (NT/P68)	2006/2949	Referral Decision	Completed
Capital Dredging Weipa South Channel	2003/1302	Referral Decision	Completed
Groote Eylandt Offshore Marine Surveys	2010/5643	Referral Decision	Completed
Nova 3D Seismic Survey, WA 442-NT/P81, Joseph Bonaparte Gulf	2013/6820	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Carbonate bank and terrace system of the Sahul Shelf	North-west
Carbonate bank and terrace system of the Van Diemen Rise	North
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North
Pinnacles of the Bonaparte Basin	North-west
Pinnacles of the Bonaparte Basin	North
Plateaux and saddle north-west of the Wellesley Islands	North
Shelf break and slope of the Arafura Shelf	North
Submerged coral reefs of the Gulf of Carpentaria	North
Tributary Canyons of the Arafura Depression	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Dermochelys coriacea Leatherback Turtle [1768]	Internesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		

Scientific Name	Behaviour	Presence
Anous stolidus Common Noddy [825]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Foraging	Likely to occur
Onychoprion anaethetus Bridled Tern [82845]	Breeding	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Breeding (high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding (high numbers)	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Thalasseus bergii Crested Tern [83000]	Breeding	Known to occur
Thalasseus bergii Crested Tern [83000]	Breeding (high numbers)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 10-Jun-2024

Figure 1: SWMR PMST sub area 1 (labelled '2')

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	3
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	141
Listed Migratory Species:	84

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	240
Commonwealth Heritage Places:	4
Listed Marine Species:	123
Whales and Other Cetaceans:	39
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	63
Regional Forest Agreements:	1
Nationally Important Wetlands:	5
EPBC Act Referrals:	131
Key Ecological Features (Marine):	11
Biologically Important Areas:	33
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Australian Convict Sites (Fremantle Prison)	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
Fremantle Prison (former)	WA	Listed place
Indigenous		
Cheetup Rock Shelter	WA	Listed place
Natural		
Fitzgerald River National Park	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Becher point wetlands	Within Ramsar site
Forrestdale and thomsons lakes	Within 10km of Ramsar site
Lake gore	Within Ramsar site
Lake warden system	Within 10km of Ramsar site
Peel-yalgorup system	Within Ramsar site
Vasse-wonnerup system	Within Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area
CRUSTACEAN		
Engaewa pseudoreducta		
Margaret River Burrowing Crayfish [82674]	Critically Endangered	Species or species habitat may occur within area
Engaewa reducta		
Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat may occur within area
FISH		
Galaxias truttaceus (Western Australian population)		
Western Trout Minnow [89857]	Endangered	Species or species habitat known to occur within area
Galaxiella nigrostriata		
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat known to occur within area
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannatherina balstoni		
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area
INSECT		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
Trioza barrettae		
Banksia brownii plant louse [87805]	Endangered	Species or species habitat known to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Translocated population known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Adenanthos dobagii Fitzgerald Woollybush [21253]	Endangered	Species or species habitat likely to occur within area
Adenanthos ellipticus Oval-leaf Adenanthos [4570]	Vulnerable	Species or species habitat likely to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Andersonia pinaster Two Peoples Bay Andersonia [67444]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat likely to occur within area
Banksia verticillata Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat known to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat may occur within area
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat may occur within area
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat likely to occur within area
Caladenia caesarea subsp. maritima Cape Spider-orchid [64856]	Endangered	Species or species habitat known to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia harringtoniae		
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat may occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Caladenia lodgeana		
Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia procera		
Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat known to occur within area
Caladenia viridescens		
Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known to occur within area
Calectasia cyanea		
Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat likely to occur within area
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6)		
Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat likely to occur within area
Chamelaucium sp. S coastal plain (R.D.Royce 4872)		
Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
Chordifex abortivus		
Manypeaks Rush [64868]	Endangered	Species or species habitat likely to occur within area
Commersonia apella		
Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat known to occur within area
Coopernookia georgei		
Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat likely to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Grevillea infundibularis Fan-leaf Grevillea [5772]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat known to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Stylidium galioides Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area
Verticordia crebra [55678]	Vulnerable	Species or species habitat likely to occur within area
Verticordia densiflora var. pedunculata Long-stalked Featherflower [55689]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. vassensis Vasse Featherflower [55804]	Endangered	Species or species habitat may occur within area
Wurmbea calcicola Naturaliste Nancy [64691]	Endangered	Species or species habitat known to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Physeter macrocephalus](#) Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - ARTILLERY BARRACKS - FREMANTLE [50155]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50183]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50184]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50186]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50185]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50181]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50187]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50182]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50117]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50133]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50134]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50132]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50131]	WA
Defence - ROCKINGHAM - NAVY CPSO [50135]	WA
Defence - SWANBOURNE RIFLE RANGE [50188]	WA

Commonwealth Land Name	State
Defence - SWANBOURNE RIFLE RANGE [50191]	WA
Unknown	
Commonwealth Land - [50504]	WA
Commonwealth Land - [50503]	WA
Commonwealth Land - [50507]	WA
Commonwealth Land - [50506]	WA
Commonwealth Land - [50495]	WA
Commonwealth Land - [50505]	WA
Commonwealth Land - [50425]	WA
Commonwealth Land - [50473]	WA
Commonwealth Land - [50424]	WA
Commonwealth Land - [50493]	WA
Commonwealth Land - [50567]	WA
Commonwealth Land - [50633]	WA
Commonwealth Land - [50566]	WA
Commonwealth Land - [50483]	WA
Commonwealth Land - [50467]	WA
Commonwealth Land - [50487]	WA
Commonwealth Land - [50551]	WA
Commonwealth Land - [50558]	WA
Commonwealth Land - [50431]	WA
Commonwealth Land - [50550]	WA
Commonwealth Land - [50518]	WA
Commonwealth Land - [50437]	WA
Commonwealth Land - [50422]	WA
Commonwealth Land - [51437]	WA
Commonwealth Land - [50579]	WA

Commonwealth Land Name	State
Commonwealth Land - [50631]	WA
Commonwealth Land - [51480]	WA
Commonwealth Land - [50470]	WA
Commonwealth Land - [51436]	WA
Commonwealth Land - [50478]	WA
Commonwealth Land - [50510]	WA
Commonwealth Land - [50511]	WA
Commonwealth Land - [50605]	WA
Commonwealth Land - [50516]	WA
Commonwealth Land - [50638]	WA
Commonwealth Land - [50412]	WA
Commonwealth Land - [50517]	WA
Commonwealth Land - [50496]	WA
Commonwealth Land - [50501]	WA
Commonwealth Land - [50498]	WA
Commonwealth Land - [50419]	WA
Commonwealth Land - [50418]	WA
Commonwealth Land - [50629]	WA
Commonwealth Land - [50624]	WA
Commonwealth Land - [50608]	WA
Commonwealth Land - [50573]	WA
Commonwealth Land - [50628]	WA
Commonwealth Land - [50485]	WA
Commonwealth Land - [51889]	WA
Commonwealth Land - [50446]	WA
Commonwealth Land - [50500]	WA
Commonwealth Land - [50486]	WA

Commonwealth Land Name	State
Commonwealth Land - [50475]	WA
Commonwealth Land - [50456]	WA
Commonwealth Land - [50457]	WA
Commonwealth Land - [52281]	WA
Commonwealth Land - [50455]	WA
Commonwealth Land - [50522]	WA
Commonwealth Land - [50529]	WA
Commonwealth Land - [50527]	WA
Commonwealth Land - [50525]	WA
Commonwealth Land - [50571]	WA
Commonwealth Land - [50570]	WA
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)
South-west Corner	Multiple Use Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Geographe	National Park Zone (IUCN II)

Park Name	Zone & IUCN Categories
Perth Canyon	National Park Zone (IUCN II)
Perth Canyon	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Geographe	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Arpenteur	Nature Reserve	WA
Bald Island	Nature Reserve	WA
Bold Park	Botanic Gardens	WA
Broadwater	Nature Reserve	WA
Cape Le Grand	National Park	WA

Protected Area Name	Reserve Type	State
Carnac Island	Nature Reserve	WA
Cottesloe Reef	Fish Habitat Protection Area	WA
D'Entrecasteaux	National Park	WA
Doubtful Islands	Nature Reserve	WA
Eclipse Island	Nature Reserve	WA
Fitzgerald River	National Park	WA
Flinders Bay	Nature Reserve	WA
Hamelin Island	Nature Reserve	WA
Investigator Island	Nature Reserve	WA
Jerdacuttup Lakes	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Locke	Nature Reserve	WA
Marmion	Marine Park	WA
Mount Manypeaks	Nature Reserve	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0085A)	Conservation Covenant	WA
NTWA Bushland covenant (0085B)	Conservation Covenant	WA
NTWA Bushland covenant (0173)	Conservation Covenant	WA
NTWA Bushland covenant (0178)	Conservation Covenant	WA
Penguin Island	Conservation Park	WA
Port Kennedy Scientific Park	Nature Reserve	WA
Quagering	Nature Reserve	WA
Quarram	Nature Reserve	WA
Recherche Archipelago	Nature Reserve	WA
Rottnest Island	State Reserve	WA
Shoalwater Bay Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Shoalwater Islands	Marine Park	WA
St Alouarn Island	Nature Reserve	WA
Stokes	National Park	WA
Sugar Loaf Rock	Nature Reserve	WA
Swan River	Management Area	WA
Torndirrup	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA25836	Nature Reserve	WA
Unnamed WA26620	Nature Reserve	WA
Unnamed WA26885	Nature Reserve	WA
Unnamed WA27888	Nature Reserve	WA
Unnamed WA32478	5(1)(h) Reserve	WA
Unnamed WA41568	Nature Reserve	WA
Unnamed WA41597	Nature Reserve	WA
Unnamed WA42379	5(1)(h) Reserve	WA
Unnamed WA42469	Nature Reserve	WA
Unnamed WA42879	Nature Reserve	WA
Unnamed WA43903	Nature Reserve	WA
Unnamed WA44004	Nature Reserve	WA
Unnamed WA44676	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44709	5(1)(h) Reserve	WA
Unnamed WA48837	Nature Reserve	WA
Unnamed WA48955	5(1)(h) Reserve	WA
Unnamed WA48968	5(1)(h) Reserve	WA
Unnamed WA49220	Conservation Park	WA
Unnamed WA49385	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA50017	Nature Reserve	WA
Walpole-Nornalup	National Park	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	WA
Yalgorup	National Park	WA

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
South West WA RFA	Western Australia

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Becher Point Wetlands	WA
Doggerup Creek System	WA
Rottnest Island Lakes	WA
Swan-Canning Estuary	WA
Vasse-Wonnerup Wetland System	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Fremantle District Police Complex Project	2022/09345		Completed
H2Perth hydrogen and ammonia project	2023/09559		Completed
Installation of additional potable water tank	2023/09518		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
WA Offshore Windfarm	2021/8961		Completed
Controlled action			
Aerial Application of Lavicide to Vasse-Wonnerup Wetlands	2010/5593	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Airborne sonar trials	2001/540	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
All weather access track road between Windy Harbour and Nelson Location 7965	2011/6121	Controlled Action	Post-Approval
Busselton Foreshore Redevelopment from West Street to Ford Road	2013/6830	Controlled Action	Post-Approval
Cape View Resort at Lot 190 Little Colin Street	2006/3070	Controlled Action	Post-Approval
Construction of a Deepwater, General Container Port	2009/5178	Controlled Action	Proposed Decision
Construction of New Perth Bunbury Highway project	2005/2193	Controlled Action	Post-Approval
Dawson Beach Estate Stage 2	2005/2153	Controlled Action	Post-Approval
Development Guide Plan for 46 ha Residential Subdivision	2008/4102	Controlled Action	Post-Approval
Development of Busselton Health Campus	2011/6011	Controlled Action	Post-Approval
Development of Kwinana Quay port facility	2008/4387	Controlled Action	Completed
Develop Trails and a Wetlands Demonstration Site and Centre	2008/4439	Controlled Action	Post-Approval
Eastern Link Project, Busselton WA	2018/8155	Controlled Action	Post-Approval
Industry Zone	2010/5337	Controlled Action	Post-Approval
Lennox Weir Removal, 12kms west Busselton	2021/8915	Controlled Action	Assessment Approach
Lower Vasse River Sediment Removal	2021/9051	Controlled Action	Post-Approval
Mangles Bay Marina Based Tourist Precinct	2010/5659	Controlled Action	Post-Approval
Neighbourhood Shopping Centre and Mixed Business Centre, Ocean Road, Dawesville	2006/3155	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Old Broadwater Farm Estate Subdivision - Stage 3	2009/5231	Controlled Action	Post-Approval
Peel's Retreat Estate - Residential development	2006/3063	Controlled Action	Post-Approval
Peppermint Park Residential Subdivision - Stage 5	2008/4028	Controlled Action	Post-Approval
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval
Ravensthorpe Nickel Project	2001/172	Controlled Action	Post-Approval
Residential Development, Lot 3 & 4 Dorsett Street	2006/2774	Controlled Action	Completed
Residential development Lot 3, 500 Bussell Highway, WA	2013/7098	Controlled Action	Post-Approval
Residential development Lots 8 & 9 King Street	2006/2787	Controlled Action	Completed
retirement units & aged care facility development	2007/3533	Controlled Action	Post-Approval
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed
Shenton Park Subdivision	2004/1479	Controlled Action	Completed
Smiths Beach Project, Yallingup - Coastal Tourism Village	2021/9141	Controlled Action	Referral Publication
Southern Bluefin Tuna Farm	2005/2165	Controlled Action	Completed
Subdivision Lot 1 Dawesville Rd	2005/2394	Controlled Action	Post-Approval
Three Turning Pockets West of Busselton Townsite	2002/846	Controlled Action	Post-Approval
Tourism Villa Facility Development	2008/4025	Controlled Action	Post-Approval
tourist and residential development	2007/3483	Controlled Action	Post-Approval
Upgrade of Ford Road	2005/2113	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval
Not controlled action			
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed
25 Lot Residential Subdivision	2009/4830	Not Controlled Action	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674	Not Controlled Action	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835	Not Controlled Action	Completed
Cape Naturaliste Road Shared Pathway, Dunsborough, WA	2018/8282	Not Controlled Action	Completed
Causeway Bridge Duplication, Busselton, WA	2018/8309	Not Controlled Action	Completed
Caves Road widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475	Not Controlled Action	Completed
Clear Lot 503, 54 Ocean Road Dawesville, WA	2014/7375	Not Controlled Action	Completed
Construction and operation of an 8 turbine wind farm at Rous Head Harbour, Frema	2003/933	Not Controlled Action	Completed
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eastport canal estate development stage 5	2007/3737	Not Controlled Action	Completed
Establishment of a National Lifestyle Village	2011/6081	Not Controlled Action	Completed
Expansion of berthing facilities at Kwinana Bulk Terminal	2006/2509	Not Controlled Action	Completed
Expansion of existing Ammonium Nitrate Production Facility	2005/1941	Not Controlled Action	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891	Not Controlled Action	Completed
Florida Estate Residential Subdivision Development Stage 13	2011/6045	Not Controlled Action	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462	Not Controlled Action	Completed
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477	Not Controlled Action	Completed
Gas-fired Power Station	2005/2213	Not Controlled Action	Completed
Geo-science Investigations	2005/2069	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Kennedy Bay urban development, Port Kennedy, WA	2014/7122	Not Controlled Action	Completed
Kennedy Park Estate Residential Development	2003/1044	Not Controlled Action	Completed
Kwinana Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed
Limestone quarry expansion	2005/2268	Not Controlled Action	Completed
Limestone Quarry Expansion, Lots 3618 and 1794, Finn Road	2005/2332	Not Controlled Action	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Oman Australia Cable Installation, WA	2021/8922	Not Controlled Action	Completed
Oman Australia Cable - Marine Route Survey	2020/8731	Not Controlled Action	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853	Not Controlled Action	Completed
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	Not Controlled Action	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932	Not Controlled Action	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195	Not Controlled Action	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248	Not Controlled Action	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288	Not Controlled Action	Completed
Warders' Cottages Block 2 'W2'	2022/9148	Not Controlled Action	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185	Not Controlled Action	Completed
Wind Farm development	2005/2105	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952	Not Controlled Action (Particular Manner)	Post-Approval
Ambergate North Residential Development	2009/4802	Not Controlled Action (Particular Manner)	Post-Approval
Arcadia Petroleum - BR12 3D Marine Seismic Survey	2012/6476	Not Controlled Action (Particular Manner)	Post-Approval
Australian Underwater Discovery Centre	2021/9019	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Bremer Basin 2D Marine Seismic Survey, WA	2009/5013	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Garden Island Project, offshore WA	2016/7635	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Geophysical and Geotechnical Surveys	2014/7408	Not Controlled Action (Particular Manner)	Post-Approval
City of Cockburn Sporting Facilties	2005/2139	Not Controlled Action (Particular Manner)	Post-Approval
Construction of urea production plant and supporting infrastructure	2009/5067	Not Controlled Action (Particular Manner)	Post-Approval
Coodanup residential development	2006/3073	Not Controlled Action (Particular Manner)	Post-Approval
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Lake Richmond Boardwalk installation, Rockingham, WA	2013/6977	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
Monaghan's Roundabout Project - Intersection of Bussell Highway and Caves Road, Shire of Busselton	2007/3515	Not Controlled Action (Particular Manner)	Post-Approval
Multipurpose development stage 1 within 340ha	2004/1913	Not Controlled Action (Particular Manner)	Post-Approval
Novacare Lifestyle Village	2001/311	Not Controlled Action (Particular Manner)	Post-Approval
Road upgrades and walk trail development	2009/4958	Not Controlled Action (Particular Manner)	Post-Approval
South Busselton Primary School	2001/290	Not Controlled Action (Particular Manner)	Post-Approval
South West Metropolitan Railway Project	2003/1175	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Subdivision and development of residential dwelling on part Lot 1, Bussell Highw	2006/3023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic survey	2007/3725	Referral Decision	Completed
3D Seismic Survey	2012/6245	Referral Decision	Completed
Ambergate North Residential Community (4896 lots)	2008/4617	Referral Decision	Completed
CO2 3D Seismic Survey Vlaming Sub-Basin	2012/6343	Referral Decision	Completed
Grand Southern Margin 2D Marine Seismic Survey	2008/4573	Referral Decision	Completed
Kennedy Bay Urban Development,PortKennedy,Rockingh	2013/7022	Referral Decision	Completed
Lots 1-5 Bluerise Cove & Lots 801 & 124 Pleasant Grove Rezoning and Subdivision	2008/4295	Referral Decision	Completed
Narelle 3D Marine Seismic Survey	2008/4575	Referral Decision	Completed
Residential Subdivision Lot 801 Pleasant Grove Circle, Falcon, WA	2012/6507	Referral Decision	Referral Publication
Riverbank and Country Road Estates Lot 43 Bussell Highway	2005/2367	Referral Decision	Completed
Sonar Trials and Acoustic Trials	2001/538	Referral Decision	Completed
Water quality improvement trial, Lower Vasse River, Busselton, WA	2013/6975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Albany Canyons group and adjacent shelf break	South-west
Ancient coastline at 90-120m depth	South-west
Cape Mentelle upwelling	South-west

Name	Region
Commonwealth marine environment surrounding the Recherche Archipelago	South-west
Commonwealth marine environment within and adjacent to Geographe Bay	South-west
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Perth Canyon and adjacent shelf break, and other west coast canyons	South-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes Flesh-footed Shearwater [82404]	Aggregation	Known to occur
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging (in high numbers)	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range

Scientific Name	Behaviour	Presence
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high numbers)	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging (provisioning young)	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur

Scientific Name	Behaviour	Presence
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Known to occur
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (abundant food source)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (high density)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (on migration)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging Area (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (south)	Known to occur
Physeter macrocephalus		
Sperm Whale [59]	Foraging (abundant food source)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 10-Jun-2024

Figure 1: SWMR sub area 2 (labelled '3' and '4)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	3
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	141
Listed Migratory Species:	84

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	240
Commonwealth Heritage Places:	4
Listed Marine Species:	123
Whales and Other Cetaceans:	39
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	63
Regional Forest Agreements:	1
Nationally Important Wetlands:	5
EPBC Act Referrals:	131
Key Ecological Features (Marine):	11
Biologically Important Areas:	33
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Australian Convict Sites (Fremantle Prison)	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
Fremantle Prison (former)	WA	Listed place
Indigenous		
Cheetup Rock Shelter	WA	Listed place
Natural		
Fitzgerald River National Park	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Becher point wetlands	Within Ramsar site
Forrestdale and thomsons lakes	Within 10km of Ramsar site
Lake gore	Within Ramsar site
Lake warden system	Within 10km of Ramsar site
Peel-yalgorup system	Within Ramsar site
Vasse-wonnerup system	Within Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area
CRUSTACEAN		
Engaewa pseudoreducta		
Margaret River Burrowing Crayfish [82674]	Critically Endangered	Species or species habitat may occur within area
Engaewa reducta		
Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat may occur within area
FISH		
Galaxias truttaceus (Western Australian population)		
Western Trout Minnow [89857]	Endangered	Species or species habitat known to occur within area
Galaxiella nigrostriata		
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat known to occur within area
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannatherina balstoni		
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area
INSECT		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
Trioza barrettae		
Banksia brownii plant louse [87805]	Endangered	Species or species habitat known to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Translocated population known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Adenanthos dobagii Fitzgerald Woollybush [21253]	Endangered	Species or species habitat likely to occur within area
Adenanthos ellipticus Oval-leaf Adenanthos [4570]	Vulnerable	Species or species habitat likely to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Andersonia pinaster Two Peoples Bay Andersonia [67444]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat likely to occur within area
Banksia verticillata Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat known to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat may occur within area
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat may occur within area
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat likely to occur within area
Caladenia caesarea subsp. maritima Cape Spider-orchid [64856]	Endangered	Species or species habitat known to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia harringtoniae		
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat may occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Caladenia lodgeana		
Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia procera		
Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat known to occur within area
Caladenia viridescens		
Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known to occur within area
Calectasia cyanea		
Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat likely to occur within area
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6)		
Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat likely to occur within area
Chamelaucium sp. S coastal plain (R.D.Royce 4872)		
Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
Chordifex abortivus		
Manypeaks Rush [64868]	Endangered	Species or species habitat likely to occur within area
Commersonia apella		
Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat known to occur within area
Coopernookia georgei		
Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat likely to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Grevillea infundibularis Fan-leaf Grevillea [5772]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat known to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Stylidium galioides Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area
Verticordia crebra [55678]	Vulnerable	Species or species habitat likely to occur within area
Verticordia densiflora var. pedunculata Long-stalked Featherflower [55689]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. vassensis Vasse Featherflower [55804]	Endangered	Species or species habitat may occur within area
Wurmbea calcicola Naturaliste Nancy [64691]	Endangered	Species or species habitat known to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Physeter macrocephalus](#) Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - ARTILLERY BARRACKS - FREMANTLE [50155]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50183]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50185]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50184]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50186]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50181]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50187]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50182]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50117]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50134]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50133]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50131]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50132]	WA
Defence - ROCKINGHAM - NAVY CPSO [50135]	WA
Defence - SWANBOURNE RIFLE RANGE [50188]	WA

Commonwealth Land Name	State
Defence - SWANBOURNE RIFLE RANGE [50191]	WA
Unknown	
Commonwealth Land - [50495]	WA
Commonwealth Land - [50505]	WA
Commonwealth Land - [50424]	WA
Commonwealth Land - [50493]	WA
Commonwealth Land - [50507]	WA
Commonwealth Land - [50506]	WA
Commonwealth Land - [50487]	WA
Commonwealth Land - [50483]	WA
Commonwealth Land - [50425]	WA
Commonwealth Land - [50473]	WA
Commonwealth Land - [50564]	WA
Commonwealth Land - [50566]	WA
Commonwealth Land - [50567]	WA
Commonwealth Land - [50467]	WA
Commonwealth Land - [50551]	WA
Commonwealth Land - [50558]	WA
Commonwealth Land - [50431]	WA
Commonwealth Land - [50550]	WA
Commonwealth Land - [50633]	WA
Commonwealth Land - [50437]	WA
Commonwealth Land - [50422]	WA
Commonwealth Land - [50518]	WA
Commonwealth Land - [51105]	WA
Commonwealth Land - [50605]	WA
Commonwealth Land - [51437]	WA

Commonwealth Land Name	State
Commonwealth Land - [50579]	WA
Commonwealth Land - [50631]	WA
Commonwealth Land - [50638]	WA
Commonwealth Land - [50517]	WA
Commonwealth Land - [50470]	WA
Commonwealth Land - [50478]	WA
Commonwealth Land - [50510]	WA
Commonwealth Land - [50511]	WA
Commonwealth Land - [50412]	WA
Commonwealth Land - [50501]	WA
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Commonwealth Land Name	State
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Commonwealth Land Name	State
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Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Artillery Barracks	WA	Listed place
Cliff Point Historic Site	WA	Listed place
J Gun Battery	WA	Listed place
Natural		
Garden Island	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis		
Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena		
Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Eudyptula minor		
Little Penguin [1085]		Breeding known to occur within area
Gallinago megala		
Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura		
Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile		
Aipysurus pooleorum		
Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Hydrophis kingii as Disteira kingii		
Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Berardius arnuxii](#) Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Geographe	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
South-west Corner	Habitat Protection Zone (IUCN IV)
Geographe	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Geographe	National Park Zone (IUCN II)

Park Name	Zone & IUCN Categories
Perth Canyon	National Park Zone (IUCN II)
Perth Canyon	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Geographe	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Arpenteur	Nature Reserve	WA
Bald Island	Nature Reserve	WA
Bold Park	Botanic Gardens	WA
Broadwater	Nature Reserve	WA
Cape Le Grand	National Park	WA

Protected Area Name	Reserve Type	State
Carnac Island	Nature Reserve	WA
Cottesloe Reef	Fish Habitat Protection Area	WA
D'Entrecasteaux	National Park	WA
Doubtful Islands	Nature Reserve	WA
Eclipse Island	Nature Reserve	WA
Fitzgerald River	National Park	WA
Flinders Bay	Nature Reserve	WA
Hamelin Island	Nature Reserve	WA
Investigator Island	Nature Reserve	WA
Jerdacuttup Lakes	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Locke	Nature Reserve	WA
Marmion	Marine Park	WA
Mount Manypeaks	Nature Reserve	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0085A)	Conservation Covenant	WA
NTWA Bushland covenant (0085B)	Conservation Covenant	WA
NTWA Bushland covenant (0173)	Conservation Covenant	WA
NTWA Bushland covenant (0178)	Conservation Covenant	WA
Penguin Island	Conservation Park	WA
Port Kennedy Scientific Park	Nature Reserve	WA
Quagering	Nature Reserve	WA
Quarram	Nature Reserve	WA
Recherche Archipelago	Nature Reserve	WA
Rottnest Island	State Reserve	WA
Shoalwater Bay Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Shoalwater Islands	Marine Park	WA
St Alouarn Island	Nature Reserve	WA
Stokes	National Park	WA
Sugar Loaf Rock	Nature Reserve	WA
Swan River	Management Area	WA
Torndirrup	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA25836	Nature Reserve	WA
Unnamed WA26620	Nature Reserve	WA
Unnamed WA26885	Nature Reserve	WA
Unnamed WA27888	Nature Reserve	WA
Unnamed WA32478	5(1)(h) Reserve	WA
Unnamed WA41568	Nature Reserve	WA
Unnamed WA41597	Nature Reserve	WA
Unnamed WA42379	5(1)(h) Reserve	WA
Unnamed WA42469	Nature Reserve	WA
Unnamed WA42879	Nature Reserve	WA
Unnamed WA43903	Nature Reserve	WA
Unnamed WA44004	Nature Reserve	WA
Unnamed WA44676	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44709	5(1)(h) Reserve	WA
Unnamed WA48837	Nature Reserve	WA
Unnamed WA48955	5(1)(h) Reserve	WA
Unnamed WA48968	5(1)(h) Reserve	WA
Unnamed WA49220	Conservation Park	WA
Unnamed WA49385	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA50017	Nature Reserve	WA
Walpole-Nornalup	National Park	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	WA
Yalgorup	National Park	WA

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
South West WA RFA	Western Australia

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Becher Point Wetlands	WA
Doggerup Creek System	WA
Rottnest Island Lakes	WA
Swan-Canning Estuary	WA
Vasse-Wonnerup Wetland System	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Fremantle District Police Complex Project	2022/09345		Completed
H2Perth hydrogen and ammonia project	2023/09559		Completed
Installation of additional potable water tank	2023/09518		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
WA Offshore Windfarm	2021/8961		Completed
Controlled action			
Aerial Application of Lavicide to Vasse-Wonnerup Wetlands	2010/5593	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Airborne sonar trials	2001/540	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
All weather access track road between Windy Harbour and Nelson Location 7965	2011/6121	Controlled Action	Post-Approval
Busselton Foreshore Redevelopment from West Street to Ford Road	2013/6830	Controlled Action	Post-Approval
Cape View Resort at Lot 190 Little Colin Street	2006/3070	Controlled Action	Post-Approval
Construction of a Deepwater, General Container Port	2009/5178	Controlled Action	Proposed Decision
Construction of New Perth Bunbury Highway project	2005/2193	Controlled Action	Post-Approval
Dawson Beach Estate Stage 2	2005/2153	Controlled Action	Post-Approval
Development Guide Plan for 46 ha Residential Subdivision	2008/4102	Controlled Action	Post-Approval
Development of Busselton Health Campus	2011/6011	Controlled Action	Post-Approval
Development of Kwinana Quay port facility	2008/4387	Controlled Action	Completed
Develop Trails and a Wetlands Demonstration Site and Centre	2008/4439	Controlled Action	Post-Approval
Eastern Link Project, Busselton WA	2018/8155	Controlled Action	Post-Approval
Industry Zone	2010/5337	Controlled Action	Post-Approval
Lennox Weir Removal, 12kms west Busselton	2021/8915	Controlled Action	Assessment Approach
Lower Vasse River Sediment Removal	2021/9051	Controlled Action	Post-Approval
Mangles Bay Marina Based Tourist Precinct	2010/5659	Controlled Action	Post-Approval
Neighbourhood Shopping Centre and Mixed Business Centre, Ocean Road, Dawesville	2006/3155	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Old Broadwater Farm Estate Subdivision - Stage 3	2009/5231	Controlled Action	Post-Approval
Peel's Retreat Estate - Residential development	2006/3063	Controlled Action	Post-Approval
Peppermint Park Residential Subdivision - Stage 5	2008/4028	Controlled Action	Post-Approval
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval
Ravensthorpe Nickel Project	2001/172	Controlled Action	Post-Approval
Residential Development, Lot 3 & 4 Dorsett Street	2006/2774	Controlled Action	Completed
Residential development Lot 3, 500 Bussell Highway, WA	2013/7098	Controlled Action	Post-Approval
Residential development Lots 8 & 9 King Street	2006/2787	Controlled Action	Completed
retirement units & aged care facility development	2007/3533	Controlled Action	Post-Approval
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed
Shenton Park Subdivision	2004/1479	Controlled Action	Completed
Smiths Beach Project, Yallingup - Coastal Tourism Village	2021/9141	Controlled Action	Referral Publication
Southern Bluefin Tuna Farm	2005/2165	Controlled Action	Completed
Subdivision Lot 1 Dawesville Rd	2005/2394	Controlled Action	Post-Approval
Three Turning Pockets West of Busselton Townsite	2002/846	Controlled Action	Post-Approval
Tourism Villa Facility Development	2008/4025	Controlled Action	Post-Approval
tourist and residential development	2007/3483	Controlled Action	Post-Approval
Upgrade of Ford Road	2005/2113	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval
Not controlled action			
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed
25 Lot Residential Subdivision	2009/4830	Not Controlled Action	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674	Not Controlled Action	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835	Not Controlled Action	Completed
Cape Naturaliste Road Shared Pathway, Dunsborough, WA	2018/8282	Not Controlled Action	Completed
Causeway Bridge Duplication, Busselton, WA	2018/8309	Not Controlled Action	Completed
Caves Road widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475	Not Controlled Action	Completed
Clear Lot 503, 54 Ocean Road Dawesville, WA	2014/7375	Not Controlled Action	Completed
Construction and operation of an 8 turbine wind farm at Rous Head Harbour, Frema	2003/933	Not Controlled Action	Completed
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eastport canal estate development stage 5	2007/3737	Not Controlled Action	Completed
Establishment of a National Lifestyle Village	2011/6081	Not Controlled Action	Completed
Expansion of berthing facilities at Kwinana Bulk Terminal	2006/2509	Not Controlled Action	Completed
Expansion of existing Ammonium Nitrate Production Facility	2005/1941	Not Controlled Action	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891	Not Controlled Action	Completed
Florida Estate Residential Subdivision Development Stage 13	2011/6045	Not Controlled Action	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462	Not Controlled Action	Completed
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477	Not Controlled Action	Completed
Gas-fired Power Station	2005/2213	Not Controlled Action	Completed
Geo-science Investigations	2005/2069	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Kennedy Bay urban development, Port Kennedy, WA	2014/7122	Not Controlled Action	Completed
Kennedy Park Estate Residential Development	2003/1044	Not Controlled Action	Completed
Kwinana Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed
Limestone quarry expansion	2005/2268	Not Controlled Action	Completed
Limestone Quarry Expansion, Lots 3618 and 1794, Finn Road	2005/2332	Not Controlled Action	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Oman Australia Cable Installation, WA	2021/8922	Not Controlled Action	Completed
Oman Australia Cable - Marine Route Survey	2020/8731	Not Controlled Action	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853	Not Controlled Action	Completed
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	Not Controlled Action	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932	Not Controlled Action	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195	Not Controlled Action	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248	Not Controlled Action	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288	Not Controlled Action	Completed
Warders' Cottages Block 2 'W2'	2022/9148	Not Controlled Action	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185	Not Controlled Action	Completed
Wind Farm development	2005/2105	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952	Not Controlled Action (Particular Manner)	Post-Approval
Ambergate North Residential Development	2009/4802	Not Controlled Action (Particular Manner)	Post-Approval
Arcadia Petroleum - BR12 3D Marine Seismic Survey	2012/6476	Not Controlled Action (Particular Manner)	Post-Approval
Australian Underwater Discovery Centre	2021/9019	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Bremer Basin 2D Marine Seismic Survey, WA	2009/5013	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Garden Island Project, offshore WA	2016/7635	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Geophysical and Geotechnical Surveys	2014/7408	Not Controlled Action (Particular Manner)	Post-Approval
City of Cockburn Sporting Facilties	2005/2139	Not Controlled Action (Particular Manner)	Post-Approval
Construction of urea production plant and supporting infrastructure	2009/5067	Not Controlled Action (Particular Manner)	Post-Approval
Coodanup residential development	2006/3073	Not Controlled Action (Particular Manner)	Post-Approval
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Lake Richmond Boardwalk installation, Rockingham, WA	2013/6977	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
Monaghan's Roundabout Project - Intersection of Bussell Highway and Caves Road, Shire of Busselton	2007/3515	Not Controlled Action (Particular Manner)	Post-Approval
Multipurpose development stage 1 within 340ha	2004/1913	Not Controlled Action (Particular Manner)	Post-Approval
Novacare Lifestyle Village	2001/311	Not Controlled Action (Particular Manner)	Post-Approval
Road upgrades and walk trail development	2009/4958	Not Controlled Action (Particular Manner)	Post-Approval
South Busselton Primary School	2001/290	Not Controlled Action (Particular Manner)	Post-Approval
South West Metropolitan Railway Project	2003/1175	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Subdivision and development of residential dwelling on part Lot 1, Bussell Highw	2006/3023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic survey	2007/3725	Referral Decision	Completed
3D Seismic Survey	2012/6245	Referral Decision	Completed
Ambergate North Residential Community (4896 lots)	2008/4617	Referral Decision	Completed
CO2 3D Seismic Survey Vlaming Sub-Basin	2012/6343	Referral Decision	Completed
Grand Southern Margin 2D Marine Seismic Survey	2008/4573	Referral Decision	Completed
Kennedy Bay Urban Development,PortKennedy,Rockingh	2013/7022	Referral Decision	Completed
Lots 1-5 Bluerise Cove & Lots 801 & 124 Pleasant Grove Rezoning and Subdivision	2008/4295	Referral Decision	Completed
Narelle 3D Marine Seismic Survey	2008/4575	Referral Decision	Completed
Residential Subdivision Lot 801 Pleasant Grove Circle, Falcon, WA	2012/6507	Referral Decision	Referral Publication
Riverbank and Country Road Estates Lot 43 Bussell Highway	2005/2367	Referral Decision	Completed
Sonar Trials and Acoustic Trials	2001/538	Referral Decision	Completed
Water quality improvement trial, Lower Vasse River, Busselton, WA	2013/6975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Albany Canyons group and adjacent shelf break	South-west
Ancient coastline at 90-120m depth	South-west
Cape Mentelle upwelling	South-west

Name	Region
Commonwealth marine environment surrounding the Recherche Archipelago	South-west
Commonwealth marine environment within and adjacent to Geographe Bay	South-west
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Perth Canyon and adjacent shelf break, and other west coast canyons	South-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes Flesh-footed Shearwater [82404]	Aggregation	Known to occur
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging (in high numbers)	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range

Scientific Name	Behaviour	Presence
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high numbers)	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging (provisioning young)	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur

Scientific Name	Behaviour	Presence
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Known to occur
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (abundant food source)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (high density)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (on migration)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging Area (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (south)	Known to occur
Physeter macrocephalus		
Sperm Whale [59]	Foraging (abundant food source)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX B. SUPPORTING FIGURES FOR SECTION 2.3 METEOROLOGY AND OCEANOGRAPHY

Browse

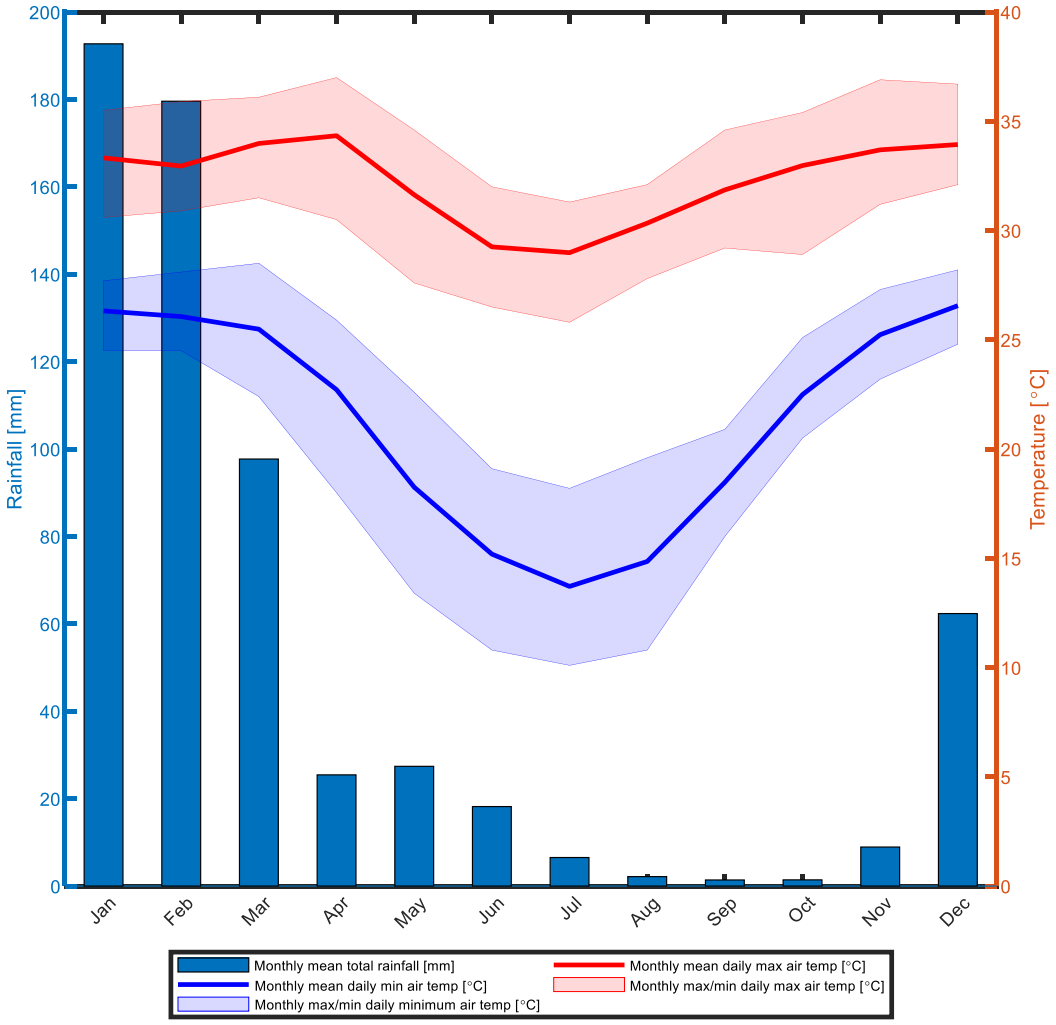


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

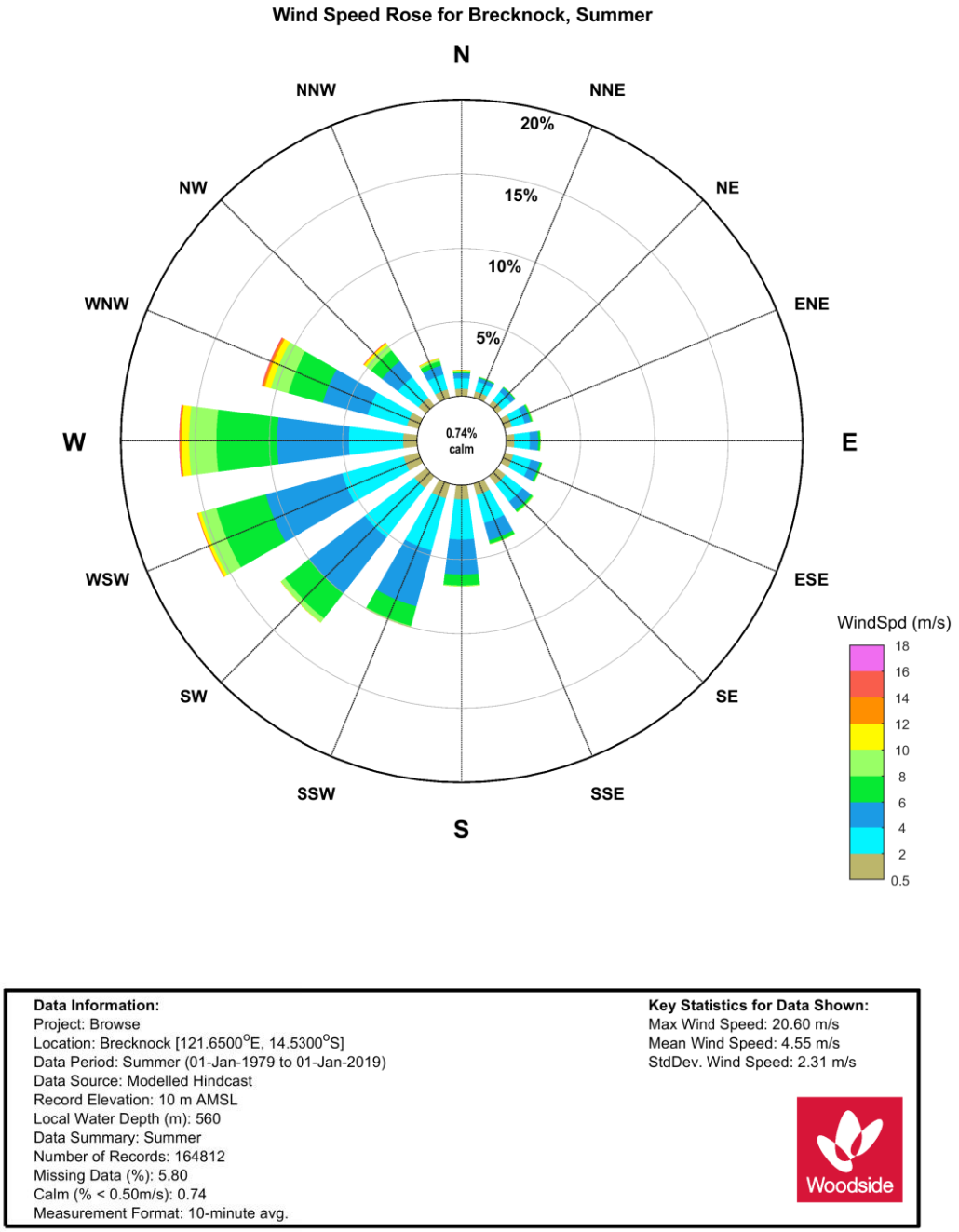
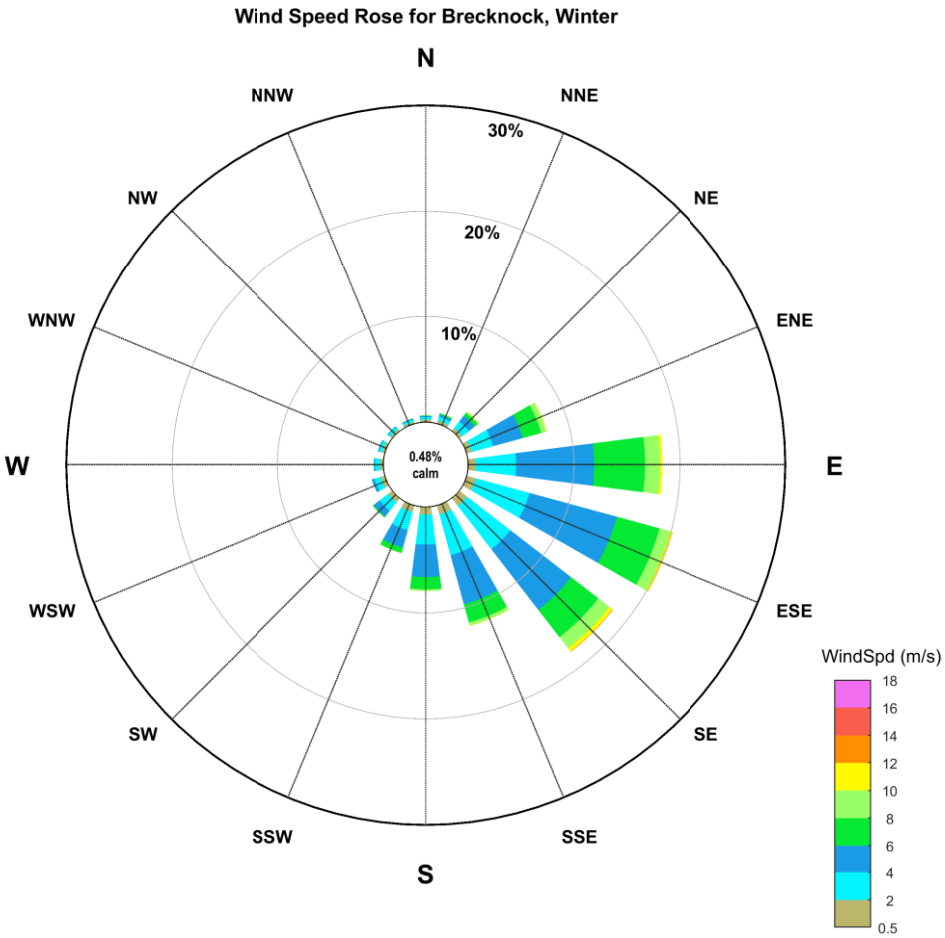


Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).



Data Information:
Project: Browse
Location: Brecknock [121.6500°E, 14.5300°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 560
Data Summary: Winter
Number of Records: 173751
Missing Data (%): 1.10
Calm (% < 0.50m/s): 0.48
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 14.34 m/s
Mean Wind Speed: 4.71 m/s
StdDev. Wind Speed: 2.01 m/s

Woodside

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).

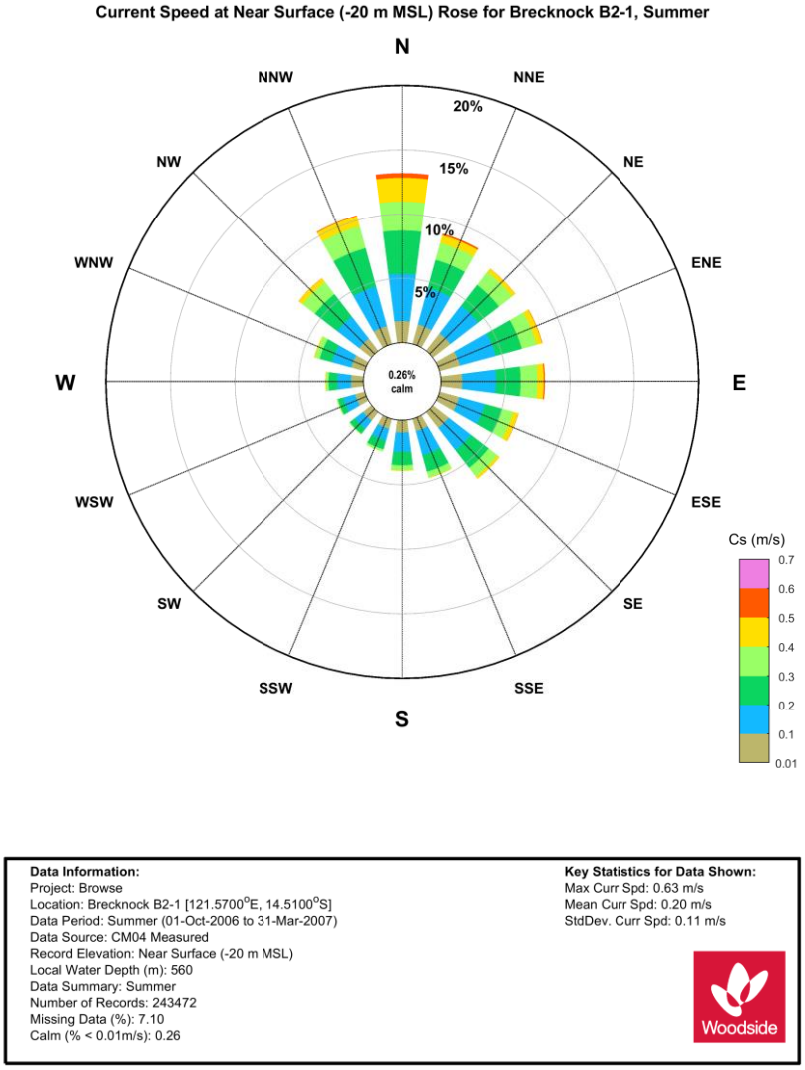


Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

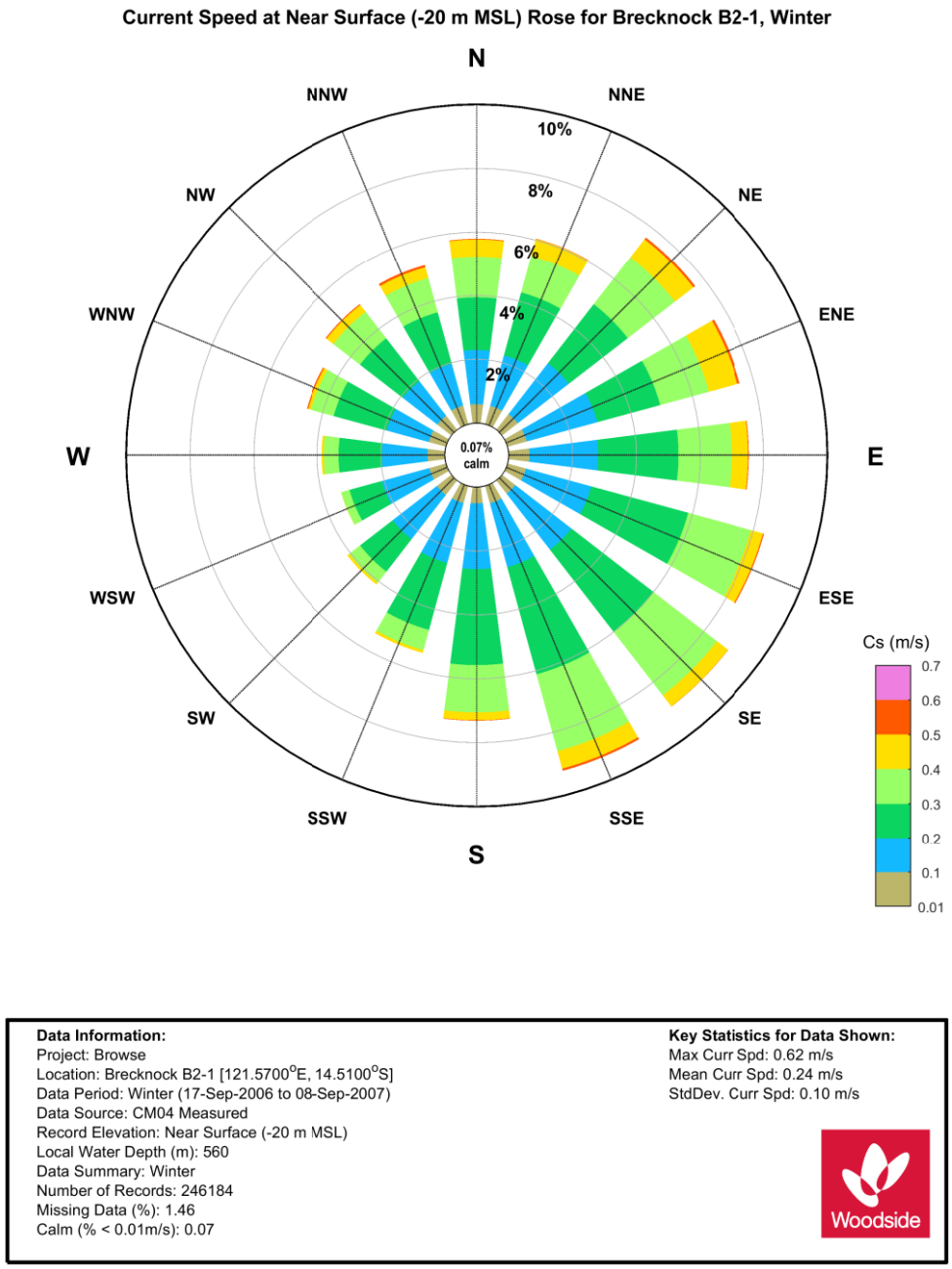


Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

North-west Shelf/Scarborough

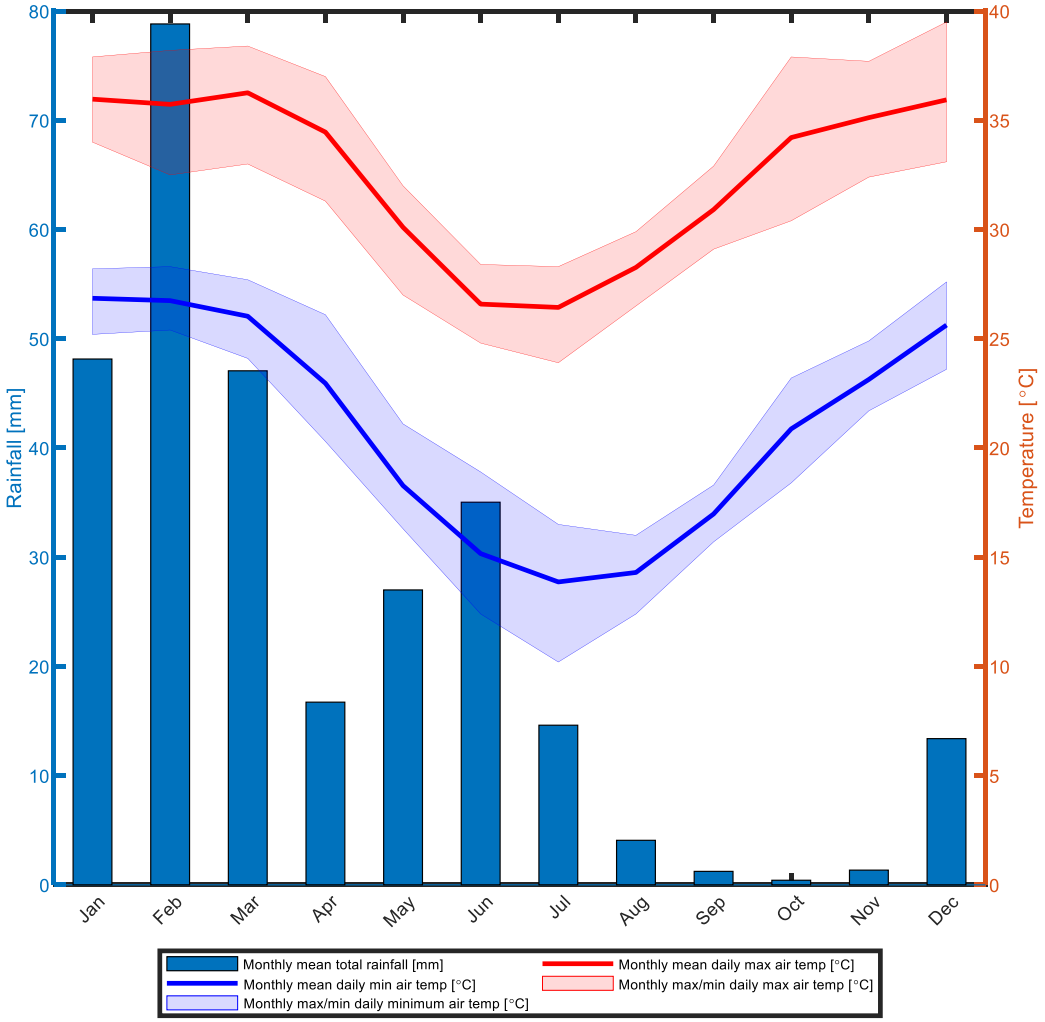
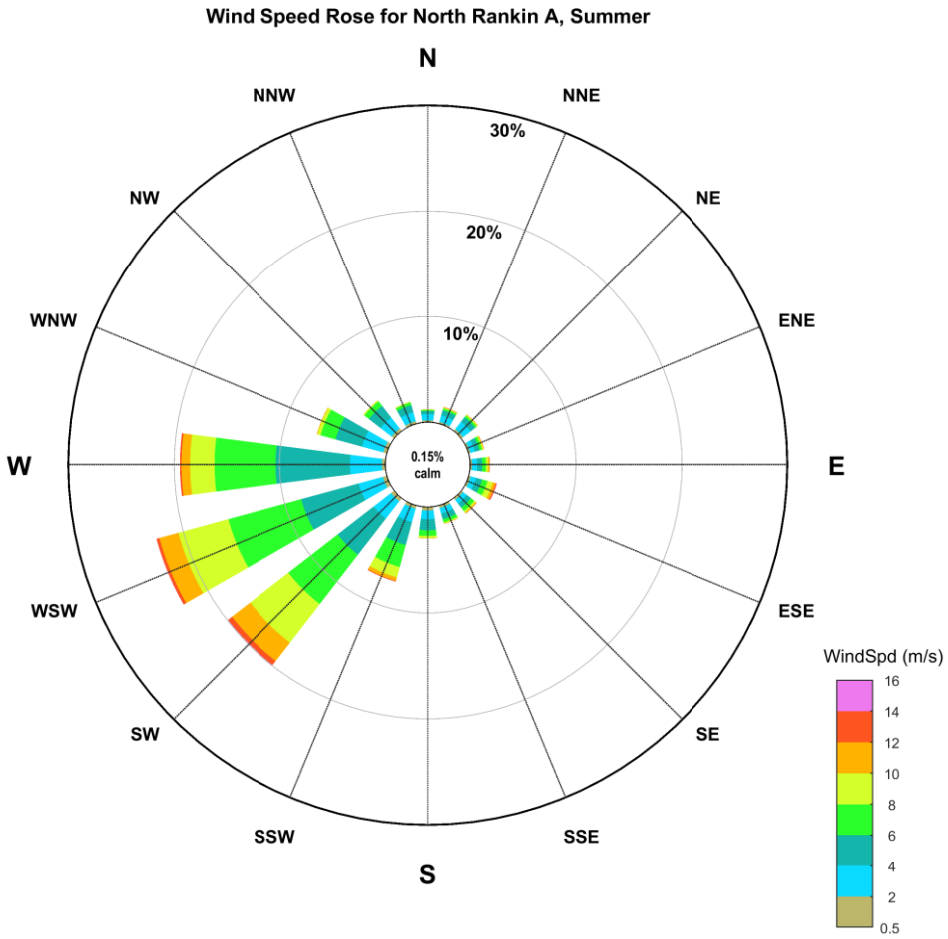


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

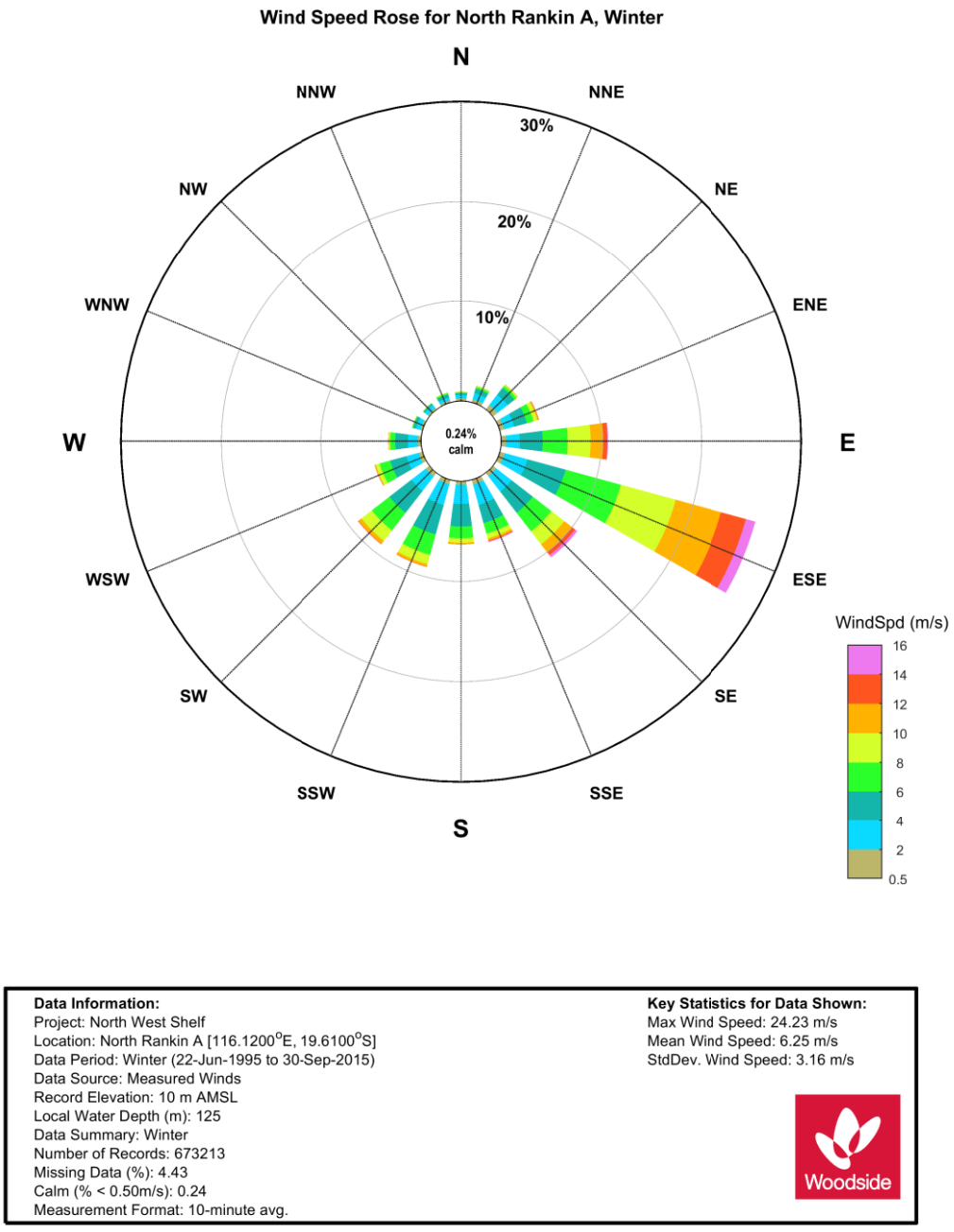


Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Summer (01-Oct-1995 to 30-Nov-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Summer
Number of Records: 674659
Missing Data (%): 7.24
Calm (% < 0.50m/s): 0.15
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 18.50 m/s
Mean Wind Speed: 6.04 m/s
StdDev. Wind Speed: 2.55 m/s

Woodside

Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).



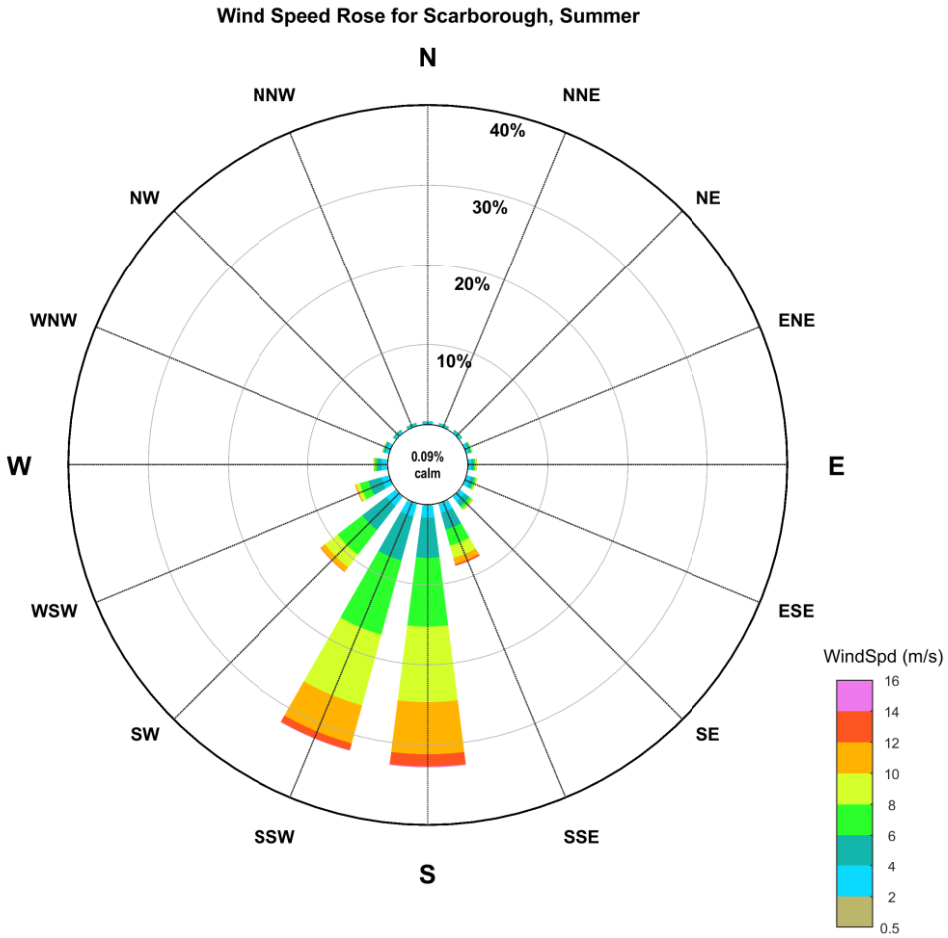
Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Winter (22-Jun-1995 to 30-Sep-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Winter
Number of Records: 673213
Missing Data (%): 4.43
Calm (% < 0.50m/s): 0.24
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 24.23 m/s
Mean Wind Speed: 6.25 m/s
StdDev. Wind Speed: 3.16 m/s

Woodside

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).

Scarborough



Data Information:
Project: North West Shelf
Location: Scarborough [113.2000°E, 19.8800°S]
Data Period: Summer (01-Jan-1979 to 01-Jan-2011)
Data Source: CSFR
Record Elevation: 10 m AMSL
Local Water Depth (m): 950
Data Summary: Summer
Number of Records: 129521
Missing Data (%): 7.46
Calm (% < 0.50m/s): 0.09
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 16.75 m/s
Mean Wind Speed: 7.23 m/s
StdDev. Wind Speed: 2.64 m/s

Woodside

Figure 4. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.

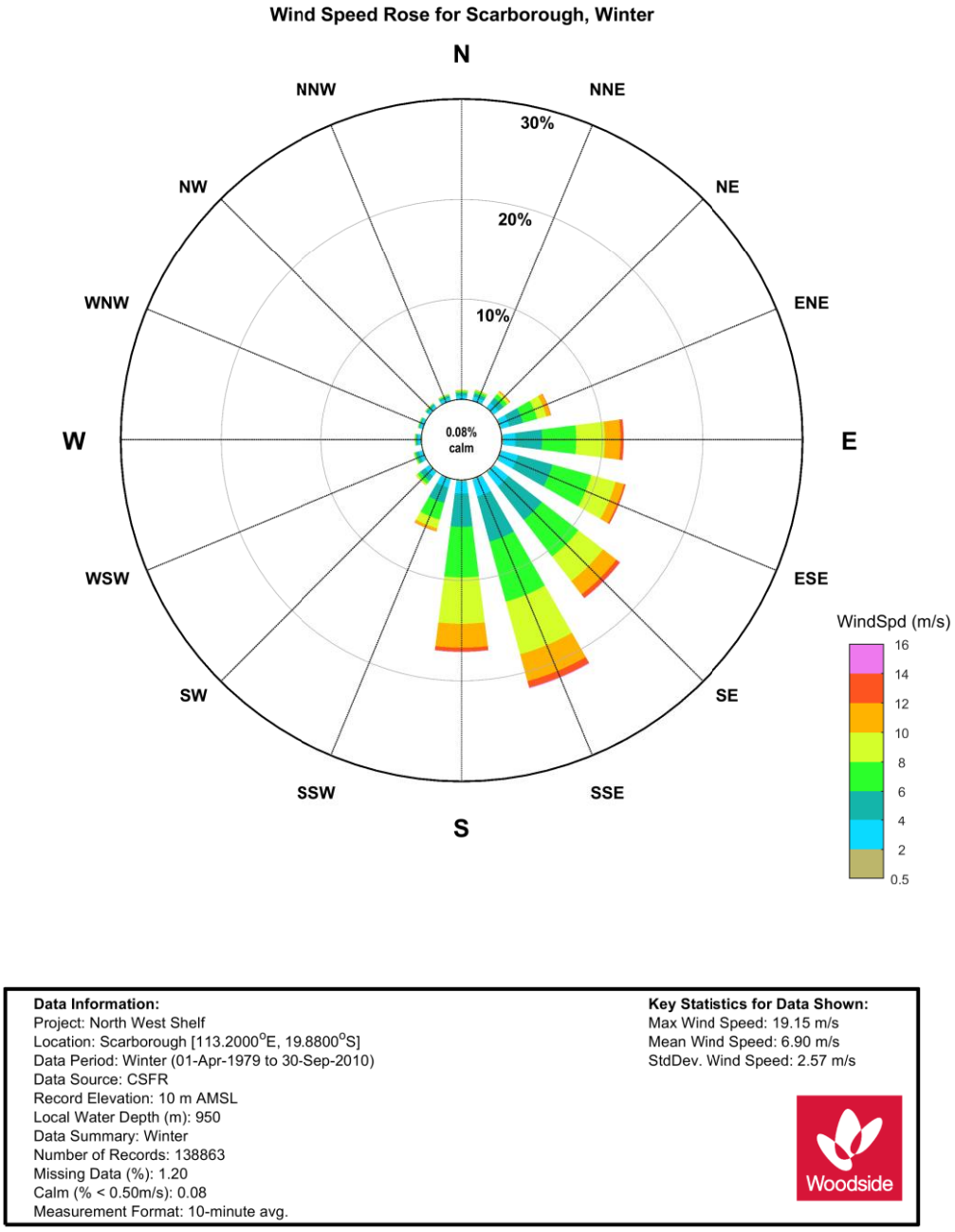


Figure 5. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016).

North-west Shelf

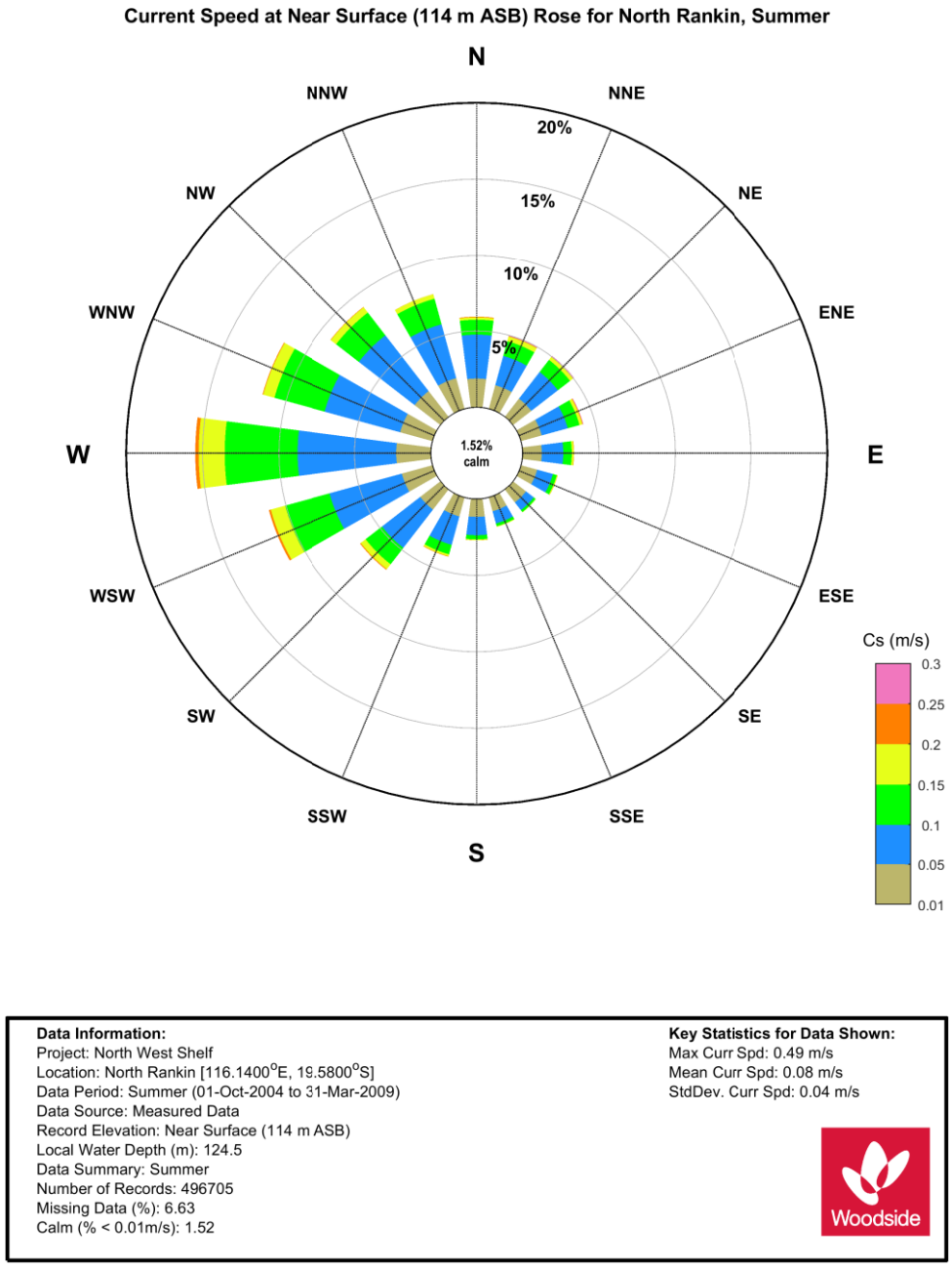


Figure 6. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

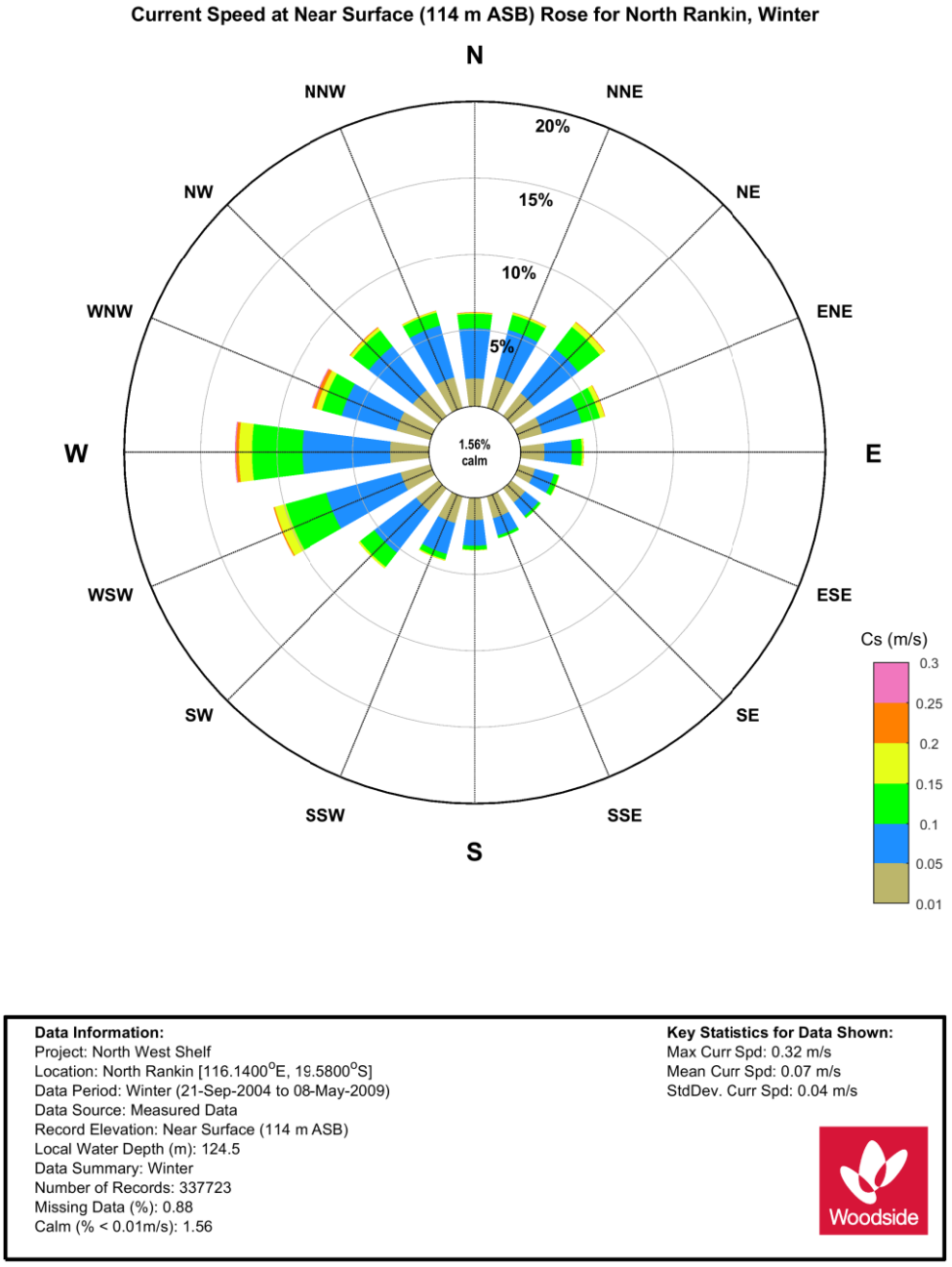


Figure 7. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

Scarborough

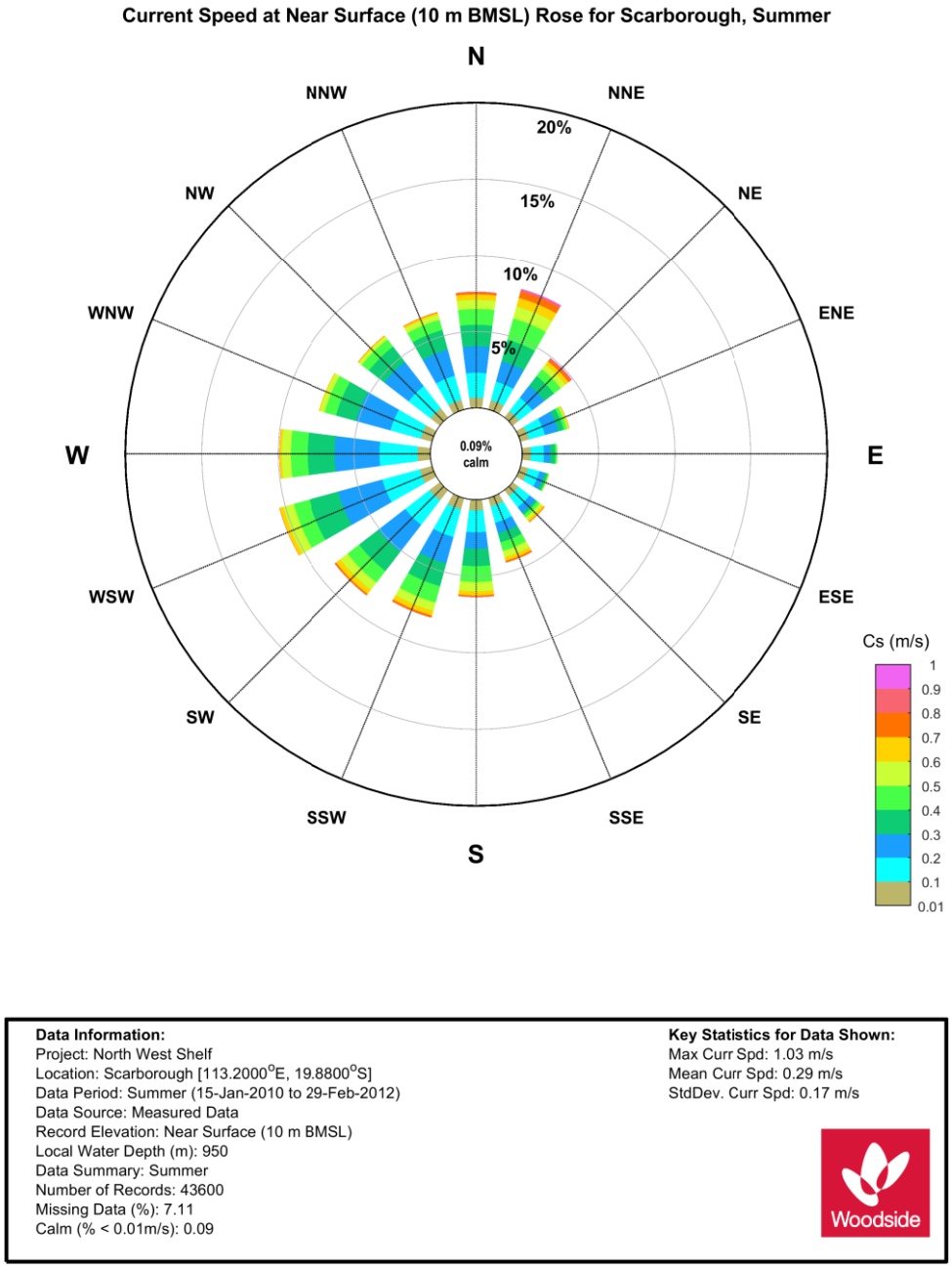


Figure 8. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

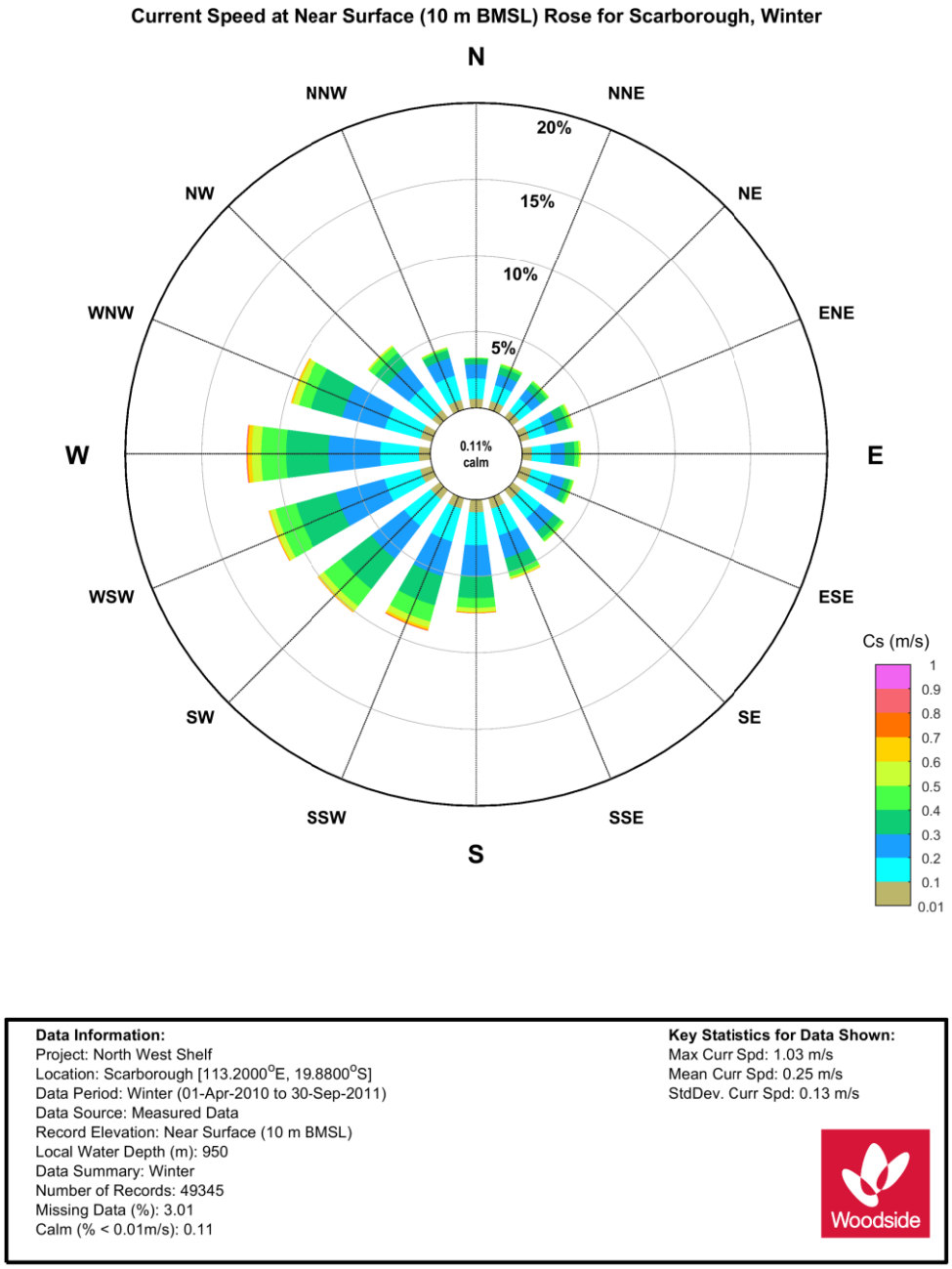


Figure 9. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

North-west Cape

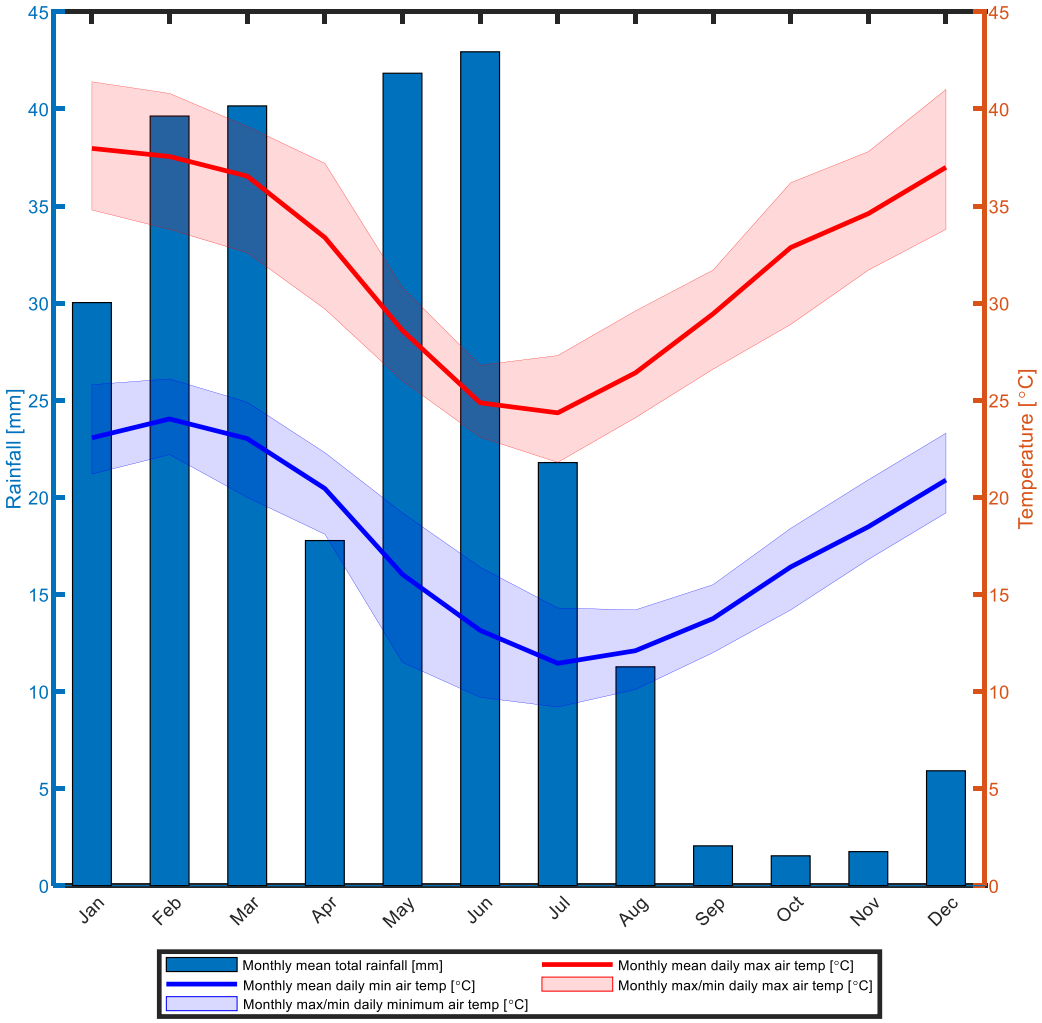


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

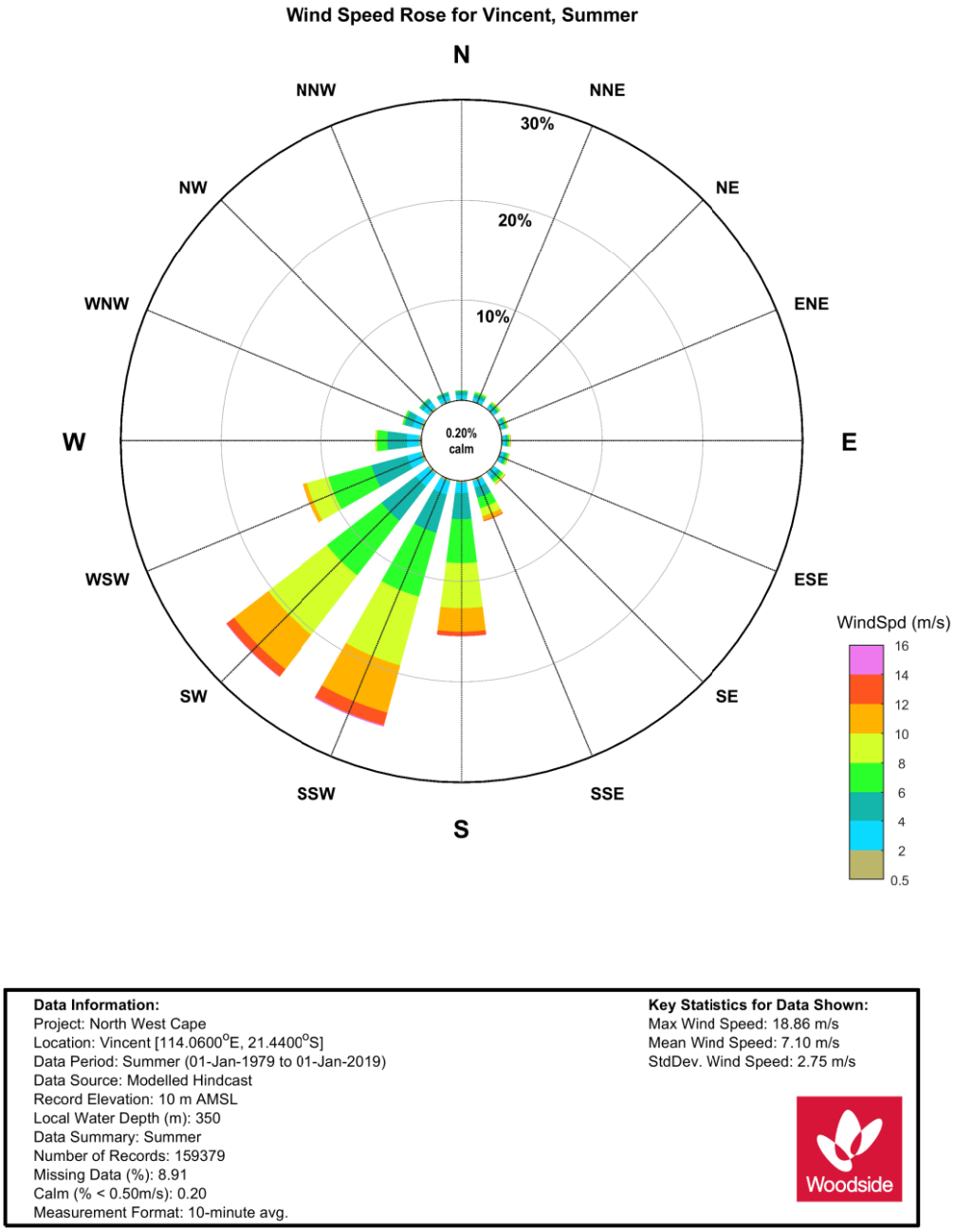
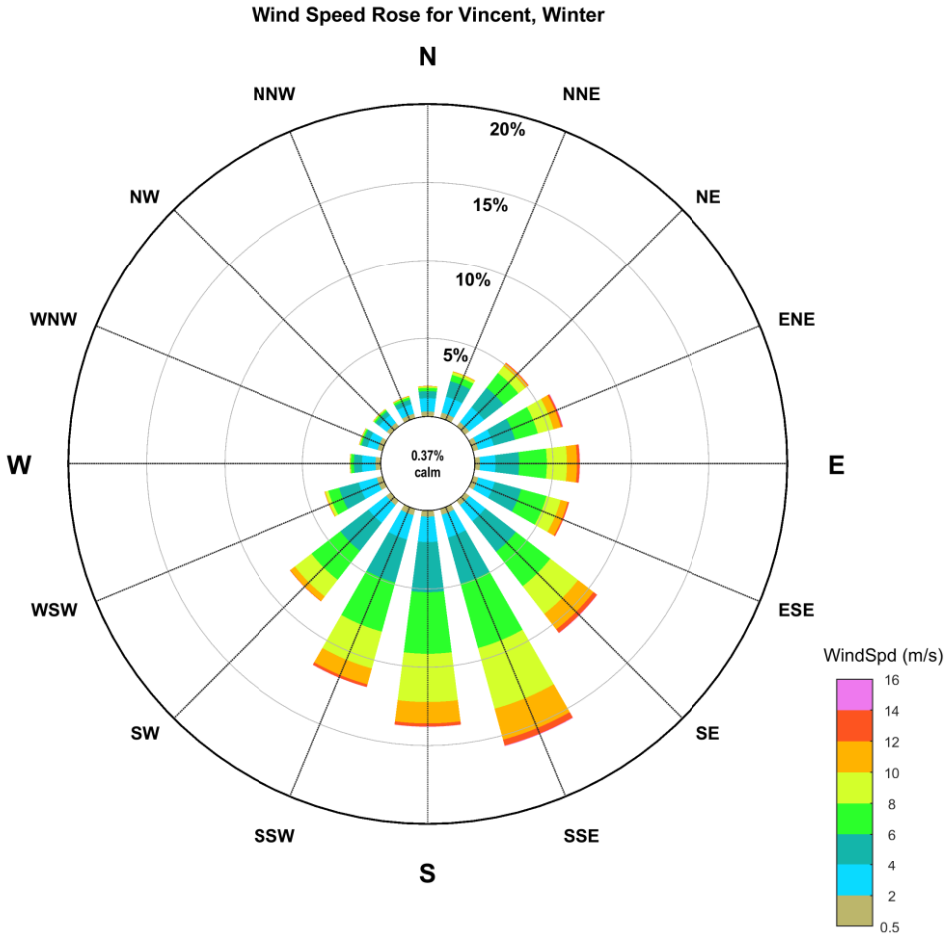


Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).



Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 350
Data Summary: Winter
Number of Records: 173626
Missing Data (%): 1.17
Calm (% < 0.50m/s): 0.37
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 19.39 m/s
Mean Wind Speed: 6.23 m/s
StdDev. Wind Speed: 2.78 m/s

Woodside

Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. In winter, winds at are predominantly from the S to SE, associated with the South East Trades. Easterly gales are experienced at the Vincent location due to high pressure systems generating from the Great Australian Bight area to the site (MetOcean Engineers, 2005).

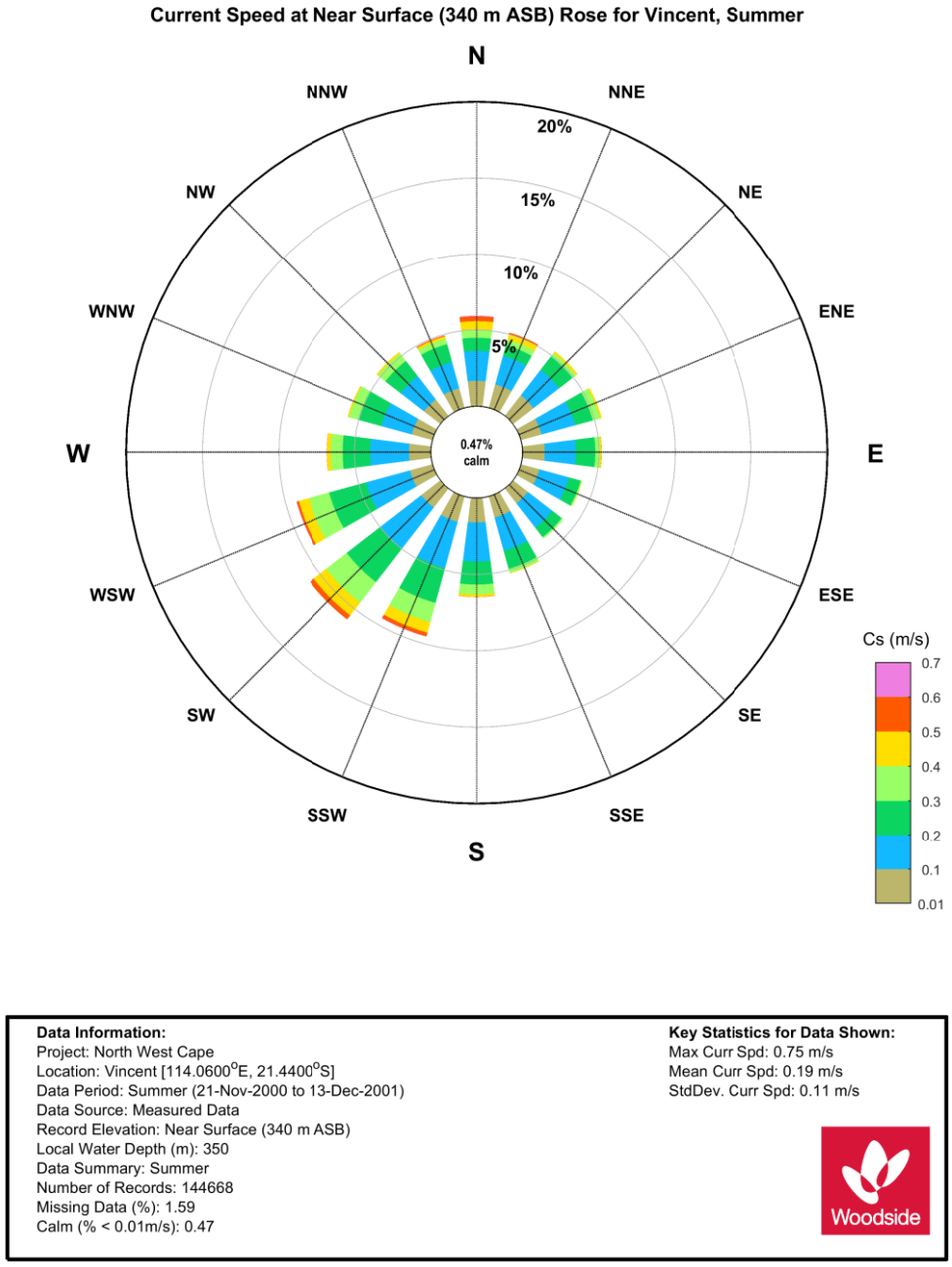


Figure 4. Summer (May – Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

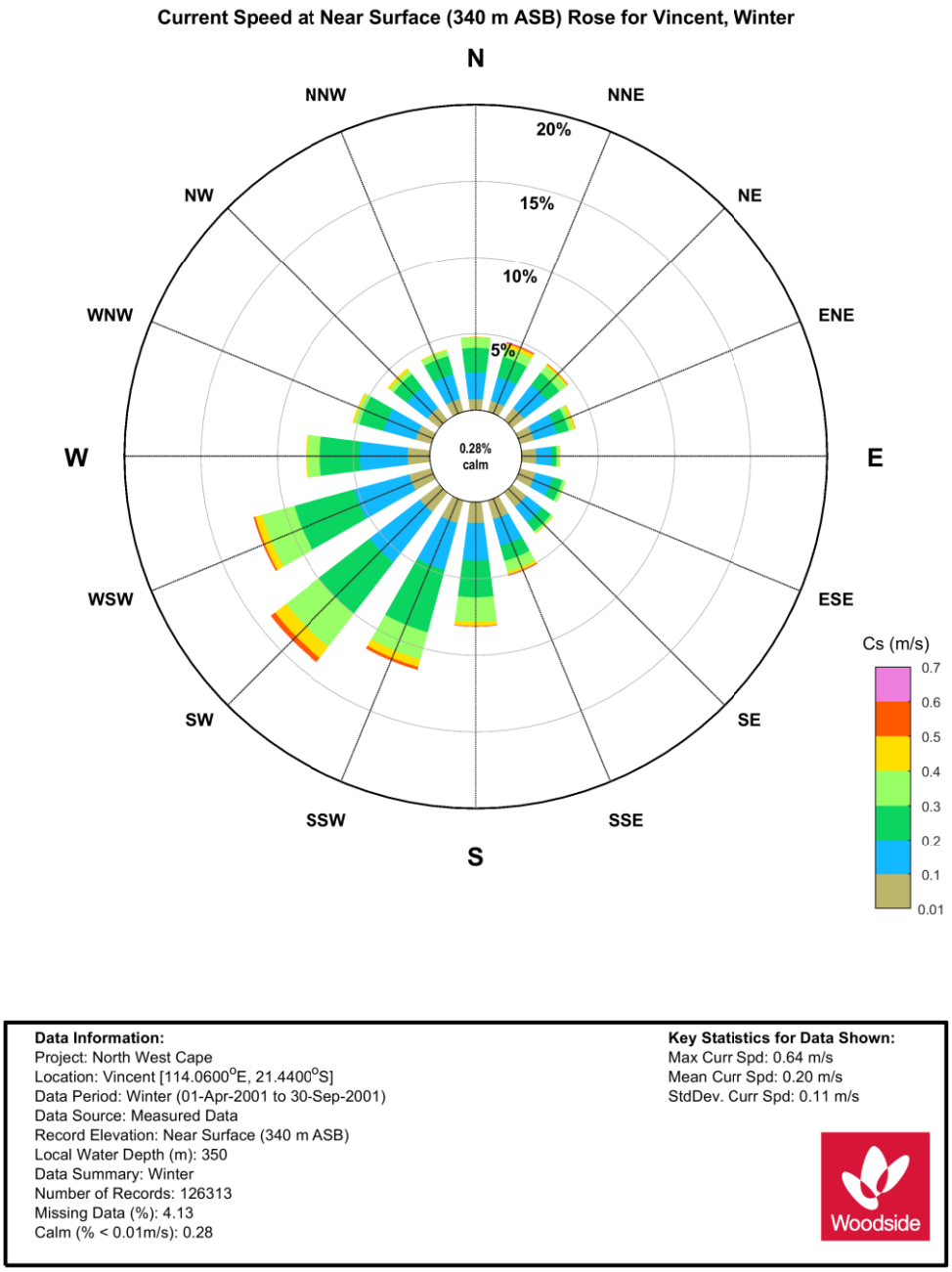


Figure 5. Winter (Nov – Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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