North Rankin Complex Facility Operations Environment Plan

Australian Operations

August 2024

Revision 11

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1. INTRODUCTION

1.1 Overview

Woodside Energy Ltd (Woodside) is the operator of the North Rankin Complex (NRC). The NRC, which has been in operation since 1984, is a single integrated facility which is comprised of two platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform. The facility is located offshore approximately 135 km north of Dampier, Western Australia, in Production Licence WA-1-L in the Carnarvon basin.

The NRC produces dry gas and condensate from the North Rankin, Persephone and Perseus fields and delivers these hydrocarbons via two trunklines to the onshore Karratha Gas Plant for processing. The NRC consists of 32 production wells (30 platform and 2 subsea, noting one platform well is suspended and not producing), installations (e.g. wellheads, production and pigging manifolds and flowlines), riser platforms and two gas trunklines. The operation of the NRC and recovery of well fluids from the associated reservoirs and subsea infrastructure is hereafter referred to as the Petroleum Activities Program.

The NRA and NRB platforms are 71 m and 135 m tall, respectively, and stand in a water depth of approximately 125 m (LAT). The NRA platform is comprised of an eight-legged steel pilot jacket with a piled and guyed steel tripod flare support structure. The NRA platform includes process facilities, utilities, drilling equipment, temporary refuge and a helideck. NRA is no longer used for personnel accommodation. The NRB platform comprises a four-legged piled steel jacket with an integrated float over deck at an elevation of 30 m above sea level. NRB comprises process facilities, accommodation and the Central Control Room (CCR). The CCR is crewed 24 hours per day. The main function of the NRB platform is to provide gas compression and condensate pumping for the well fluids produced from the NRA wells.

The NRC has a daily production capacity of up to 66,000 tonnes of dry gas and condensate which is transported via two trunklines to the Karratha Gas Plant (KGP) for processing.

This Environment Plan (EP) has been prepared as part of the requirements under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth) (Environment Regulations), as administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

This EP has been revised and submitted to NOPSEMA, at least 14 days before the end of the five-year period from the original acceptance date (i.e. before 13 September 2024), in accordance with the requirements of Regulation 41(1)(a) 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 (ESD) (as defined in Section 3A of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (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, standards, 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 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**, for a period of up to five years. The Petroleum Activity Area (PAA) is defined as the spatial boundary of the Petroleum Activities Program.

This EP addresses potential environmental impacts from planned activities and potential unplanned events that originate from within the PAA. Transit to and from the PAA by support vessels, as well as port activities associated with these vessels, are not within the scope of this EP. Vessel operations outside of the PAA (e.g., transiting to and from port) do not form part of this EP but continue to be governed by applicable maritime regulations and other requirements. The scope of this EP covers the Petroleum Activities Program for a period of up to five years and includes the following activities associated with the NRC:

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

The infrastructure covered by this EP includes the:

- NRC comprising NRA and NRB platforms;
- wells and subsea infrastructure associated with or tied back to the NRC;
- NRC trunklines located in Commonwealth Waters; and
- supporting activities associated with the activities defined above (e.g. vessel operations, helicopter transfers etc.).

The components of the NRC trunklines located in State waters is the subject of a separate EP, as per requirements of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA).

Section 3 contains a detailed description of the infrastructure and activities covered by this EP. Decommissioning of the North Rankin Complex is not planned over the next five years. Any redundant wells, trunklines or subsea infrastructure systems that cease to be used over the operating life of the activity, will be progressively decommissioned to an approved end state as soon as practicable or otherwise as agreed with NOPSEMA. The risks associated with any removal of redundant equipment prior to NRC facility decommissioning will be undertaken and managed in accordance with the requirements of this EP. Any wells or production systems that reach end of useful life will be subject to a separate future EP.

1.4 Environment Plan Summary

An EP summary will be prepared based on the material provided in this EP. **Table 1-1** summarises the content that will be provided within the EP summary, 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 2.10**
A description of the receiving environment	**Section 4**
A description of the activity	**Section 2.10**
Details of the environmental impacts and risks	**Section 6**
The control measures for the activity	**Section 6**
The arrangements for ongoing monitoring of the titleholder's environmental performance	**Section 7.8**
Response arrangements in the oil pollution emergency plan	**Section 7.12**
Consultation already undertaken and plans for ongoing consultation	**Section 5**
Details of the titleholder's nominated liaison person for the activity	**Section 1.7.2**

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: Environment Plan process phases, applicable Environment Regulations and relevant section of Environment Plan

Criteria for acceptance	Content Requirements / Relevant Regulations	Elements	Section of the 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 6** **Section 7**
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	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	**Section 1** **Section 2** **Section 3** **Section 4** **Section 5** **Section 6** **Section 7**

Criteria for acceptance	Content Requirements / Relevant Regulations	Elements	Section of the EP
	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	Detail the control measures – ALARP and acceptable.	
Regulation 34(d): provides for appropriate environmental performance outcomes, EPS and MC.	Regulation 21(7): Environmental performance outcomes and standards	Environmental Performance Objectives (EPOs) Environmental Performance Standards (EPSs) Measurement Criteria (MC)	**Section 6**
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 • Oil Pollution Emergency Plan (OPEP) and operational and scientific monitoring (OSM) • ongoing consultation.	**Section 7** **Appendix D**
Regulation 34(f): does not involve the activity or part of the activity, other than arrangements for environmental monitoring or for responding to an emergency, being undertaken in any part of a declared World Heritage property within the meaning of the EPBC Act	Regulation 21(1) 21(3): 21(1) Description of the activity 21(2) Description of the environment 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;	No activity, or part of the activity, undertaken in any part of a declared World Heritage property.	**Section 2.10** **Section 4** **Section 6**

Criteria for acceptance	Content Requirements / Relevant Regulations	Elements	Section of the EP
	• 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.	**Section 5**
Regulation 34(h): complies with the Act and the regulations	Regulation 23: Details of the Titleholder and nominated liaison 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 7.10**

1.6 Description of the Titleholder

Woodside is the operator of the NRC and associated infrastructure in the North West Shelf (NWS) Joint Venture, on behalf of itself and its joint venture partners, Shell Australia Pty Ltd, BP Developments Australia Pty Ltd, Chevron Australia Pty Ltd, CNOOC NWS Private Limited and Japan

Australia LNG (MIMI) Pty Ltd. Woodside is the Titleholder for this activity (refer to **Table 3-1** for a list of petroleum titles associated with the Petroleum Activities Program) and is Australia's largest independent oil and gas company.

Woodside is Australia's leading natural gas producer. Woodside's operations are characterised by strong safety and environmental performance in remote and challenging locations. Wherever Woodside works, it is committed to living its values of integrity, respect, ownership, sustainability, courage, and working together.

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

Woodside has an excellent track record of efficient and safe production. Woodside strives for excellence in safety and environmental performance and continues to strengthen relationships with customers, partners, co-venturers, governments, and communities. Further information about Woodside can be found at https://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 nominated liaison and arrangements for the notification of changes are described below.

1.7.1 Titleholder

Woodside Energy Ltd

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 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.au

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 Management System

The Woodside Management System (WMS) provides a structured framework of documentation to set common expectations governing how all employees and contractors at Woodside will work. Many

of the standards presented in **Section 6** are drawn from the WMS documentation, which comprises four elements as outlined below (and illustrated in **Figure 1-1**):

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

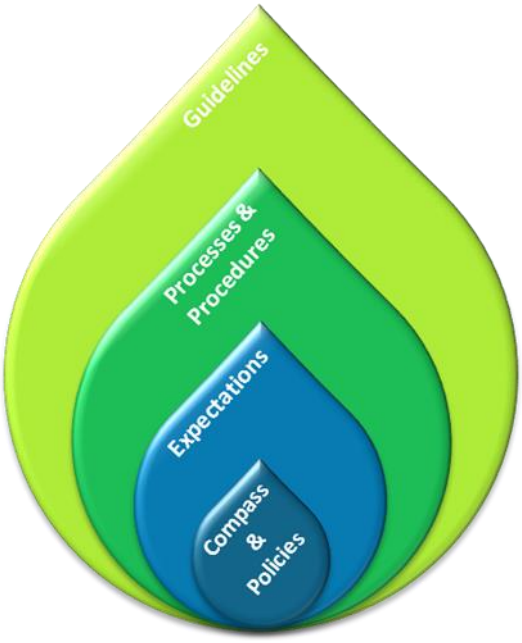


Figure 1-1: The four major elements of the Woodside Management System Seed

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

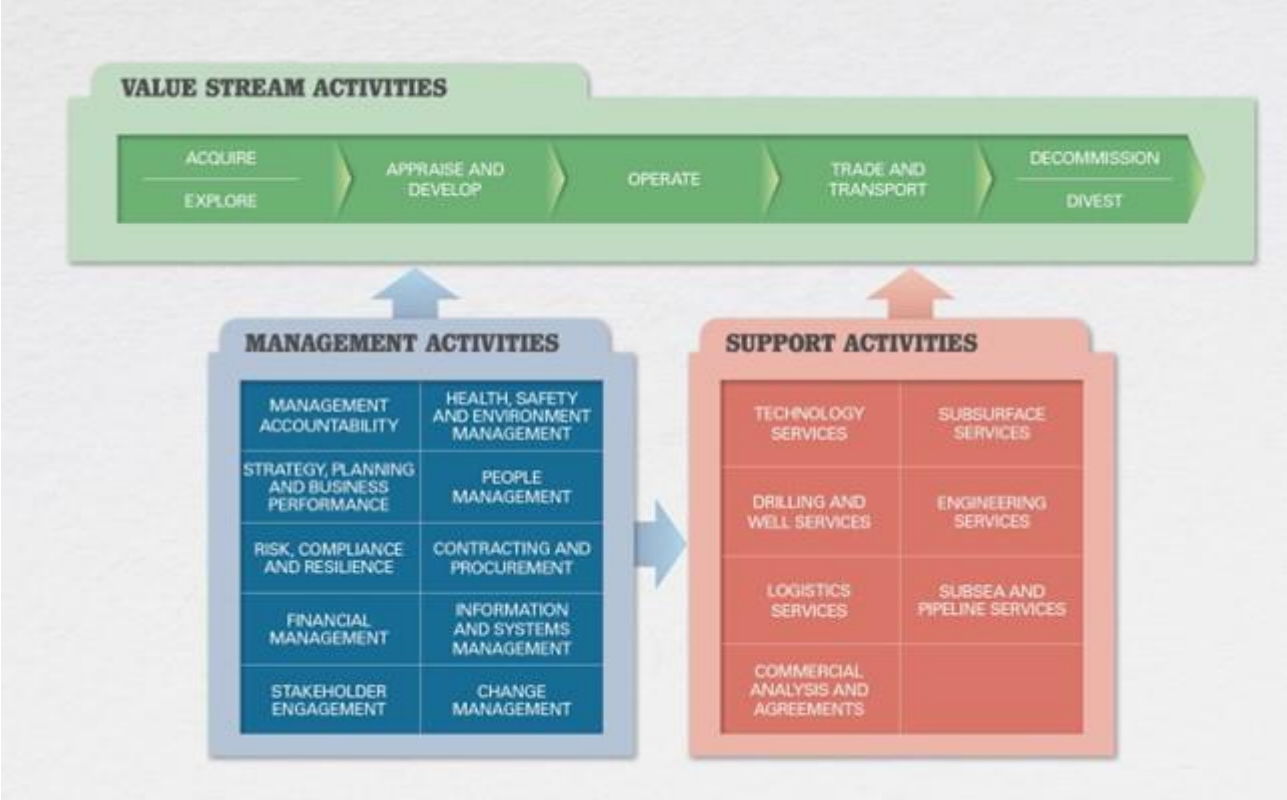


Figure 1-2: The Woodside Management System business process hierarchy

1.8.1 Environment and Biodiversity Policy

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

As the objective of the policy, 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.

As part of the policy's 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 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.

The application of the policy is the responsibility of all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of the policy in non-operated joint ventures.

The policy is reviewed regularly and updated as required. The version applicable to the activity covered in this EP was reviewed in December 2023.

1.9 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**.

1.9.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

The *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) (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 (EEZ) 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 Section 572 of the *Offshore Petroleum and Greenhouse Gas Storage Act*

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 7.3**
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 3.6 and 7.3**
7	This section has effect subject to: a) any other provision of this Act; and b) the regulations; and c) a direction given by NOPSEMA or the responsible Commonwealth Minister under: i. Chapter 3; or ii. this Chapter; and iii. (d) any other law.	**Section 7.3**

[1] There is no intent to surrender any titles in the scope of this EP.

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

- consistent with the principles of ESD;
- by which the environmental impacts and risks of the activity will be reduced to ALARP; and
- by which the environmental impacts and risks of the activity will be of an acceptable level.

1.9.2 Environment Protection and Biodiversity Conservation Act 1999 (Cth)

One of the objectives of the EPBC Act are 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 ESD. 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 the Environment and Water (Environment Minister).

In relation to offshore petroleum activities in Commonwealth waters, in accordance with the Streamlining Offshore Petroleum Approvals Program (the Program), requirements under the 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.

1.9.2.1 Offshore Project Approvals

The NRA development was approved prior to 1984 and therefore not assessed under the EPBC Act. Woodside referred development of the NRB platform to the Department of Environment and Heritage (DEH) in December 2005 for Assessment (referral Reference 2005/2500). DEH determined no assessment was required under Part 9 of the EPBC Act and approved the activities.

1.9.2.2 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 2.9** and assessed in **Section 6.9**.

1.9.2.3 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 (s.362 of the EPBC Act). Relevant AMPs are listed in **Section 4.8** and described in **Appendix C-1**. The North-west Marine Parks Network Management Plan describes the requirements for management.

Specific zones within the AMPs have been allocated conservation objectives as stated below (International Union for Conservation of Nature [IUCN] Protected Area Category) based on the Australian IUCN reserve management principles outlined in Schedule 8 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth) (EPBC Regulations 2000).

1.9.2.4 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 1-4**.

Table 1-4: Relevant management principles under Schedule 5 – Australian World Heritage management principles of the *Environment Protection and Biodiversity Conservation Act*

Condition number	Condition	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.	3.01 and 3.02: Assessment of significant impact on World Heritage values is included in **Section 6**. Principles are met by the submitted EP. 3.03 (a) and (b): World Heritage values are

Condition number	Condition	Relevant section of the EP
	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.	identified in Section 4 and considered in the assessment of impacts and risks for the Petroleum Activity in **Section 6**. 3.03 (c): Relevant persons consultation and feedback received in relation to impacts and risks to the Ningaloo World Heritage Property are outlined in **Section 5**. 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 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, once the activity was defined as a petroleum activity. 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.

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 environmental 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 Environment Risk Management Methodology

2.2.1 Woodside Risk Management Process

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

The environmental risk management methodology used in this EP is based on Woodside's Risk Management Procedure. This procedure aligns to industry standards, such as international standard ISO 31000. WMS risk management procedures, guidelines and tools provide guidance of specific techniques for managing risk, tailored for particular areas of risk within certain business processes. Procedures applied for environmental risk management include (**Section 7.2.4**):

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

The risk management methodology provides a framework to demonstrate that risks and impacts are continually identified, reduced to ALARP and assessed to be at an acceptable level, as required by the Environment Regulations. The key steps of Woodside's Risk Management Process are shown in **Figure 2-1**. A description of each step and how it is applied to the scopes of this activity is provided in **Section 2.2** to **Section 2.12**.

Figure 2-1: Woodside's risk management process

2.2.2 Health, Safety and Environment Management Procedure

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

2.2.3 Impact Assessment Procedure

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

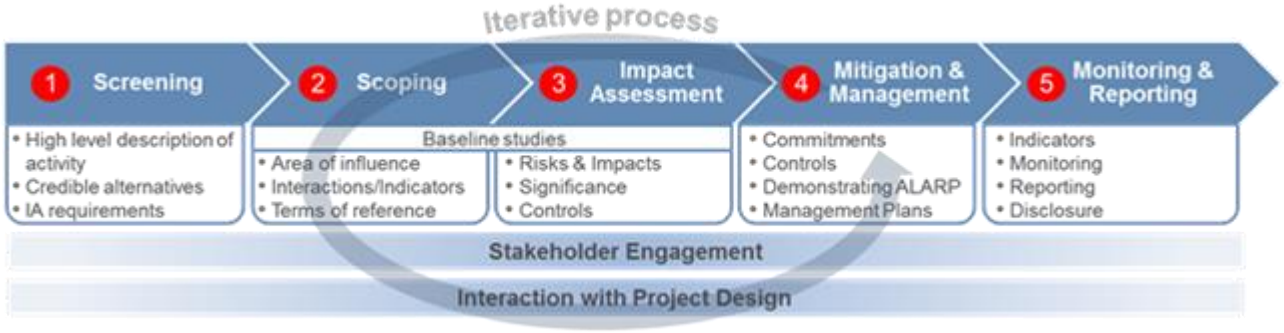


Figure 2-2: Woodside's impact assessment process

2.2.4 Process Safety Management Procedure and Process Safety Risk Assessment Procedure

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

2.3 Environment Plan Development Process

The EP development process is illustrated in **Figure 2-3**. Each element of this process is discussed further in **Section 2.4**.

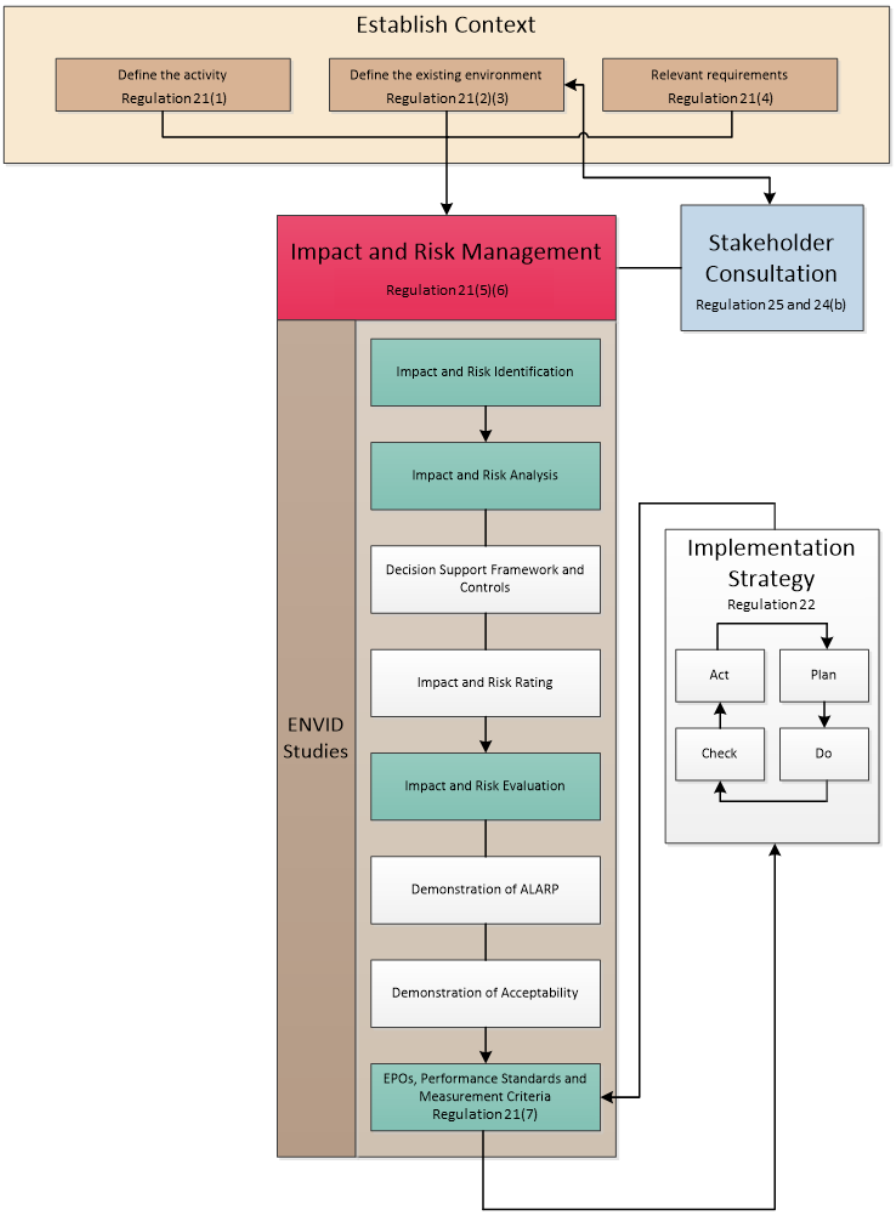


Figure 2-3: Environment Plan development process

2.4 Establish the Context

Establishment of the context involves defining the activity and the existing environment as well as outlining the relevant requirements.

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; and
- 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 4**. The purpose is to describe the existing environment that may be impacted by the activity, directly or indirectly, by planned or unplanned[2] events.

The Existing Environment (**Section 4**) is structured into subsections defining the physical, biological, socio-economic and cultural attributes of the area of interest, 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 (refer to **Table 2-1**), 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 PAA and wider environment that may be affected (EMBA), as determined by the hydrocarbon spill risk assessments presented in **Section 6.7.2**. MNES, as defined under the EPBC Act, are addressed through Woodside's impact and risk assessment (**Section 6**).
- 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.

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

[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.

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 environmental 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 (inc. 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, Risk Management Policy and Climate Policy are 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), consequence modelling studies for high consequence, low probability environmental risks, bowtie risk assessments for Major Environmental Events (MEEs) as required by Woodside's PSRA processes, desktop reviews and studies associated with the Petroleum Activities Program. 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 consultation process (**Section 6**). The environmental outputs of applicable risk and impact workshops and associated studies are referred to as ENVID in this EP.

An environmental impacts and risks identification and assessment 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 performance outcomes, standards, and measurement criteria. 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 (inc. Odour)***	***Ecosystems / Habitat***	***Species***	***Socio-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***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 feedback, 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 rating.

2.6.1 Decision Support Framework

To support the risk assessment process and Woodside's determination of acceptability (**Section 2.8.2**), Woodside's HSE risk management procedures include 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 2.8**). 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 2-4: 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 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 persons and addresses relevant stakeholder views, concerns and perceptions.

2.6.1.5 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 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 significance/ consequence. The impact significance/consequence considers the magnitude of the impact or risk and the sensitivity of the potentially impacted receptor (**Figure 2-5**).

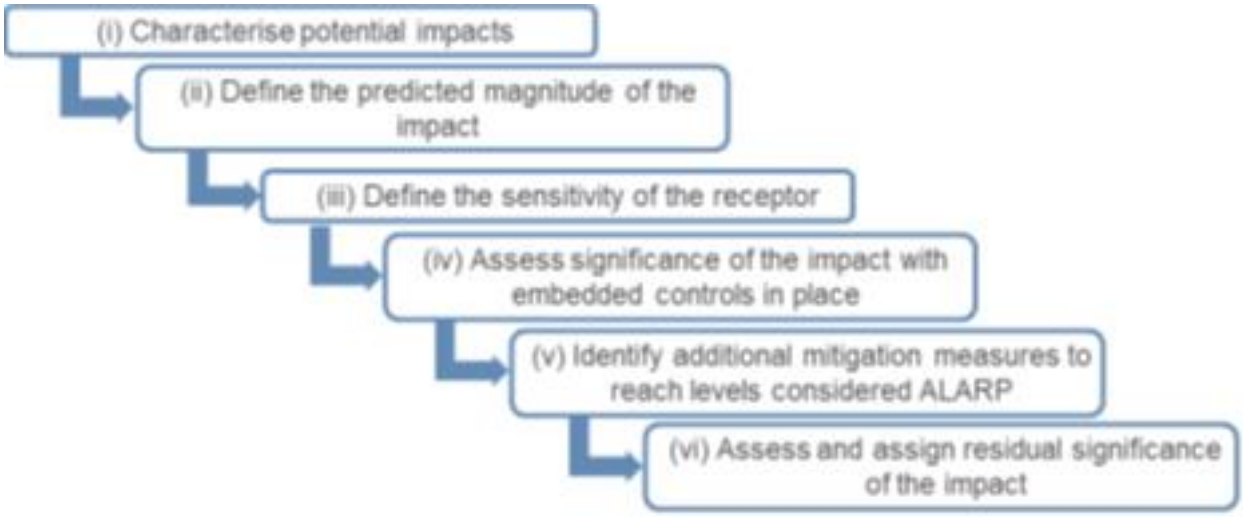


Figure 2-5: Environmental risk and impact analysis

Impacts are classified in accordance with the consequence (**Table 2-3**) outlined in Woodside's Risk Management Procedure and Risk Matrix (**Figure 2-6**). Risks are assessed qualitatively and/or quantitatively in terms of both likelihood and consequence in accordance with this matrix.

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.

Table 2-3: Woodside risk matrix (environment and social and cultural) consequence descriptions

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

2.6.4 Risk Rating Process

The risk rating process assigns a level of risk to each risk event, measured in terms of consequence 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.

The risk rating process considers the potential environmental consequences and, where applicable, the social and cultural consequences of the risk. The risk ratings are assigned using the Woodside Risk Matrix (refer to **Figure 2-6**).

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

2.6.4.1 Select the Consequence Level

Determine the worst-case credible consequence (**Table 2-3**) associated with the selected event, assuming all controls (preventive and mitigative) are absent or have failed. If more than one potential consequence applies, select the highest severity consequence level.

2.6.4.2 Select the Likelihood Level

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

Table 2-4: Woodside risk matrix likelihood levels

Likelihood Description						
Frequency	1 in 100,000 to 1,000,000 years	1 in 10,000 to 100,000 years	1 in 1000 to 10,000 years	1 in 100 to 1000 years	1 in 10 to 100 years	>1 in 10 years
Experience	Remote: Unheard of in the industry	Highly Unlikely: Has occurred once or twice in the industry	Unlikely: Has occurred many times in the industry but not at Woodside	Possible: Has occurred once or twice in Woodside or may possibly occur	Likely: Has occurred frequently at Woodside or is likely to occur	Highly Likely: Has occurred frequently at the location or is expected to occur
Likelihood Level	0	1	2	3	4	5

2.6.4.3 Calculating the Risk Rating

The risk rating is derived from the consequence and likelihood levels above, in accordance with the Woodside Risk Matrix shown in **Figure 2-6**. 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.

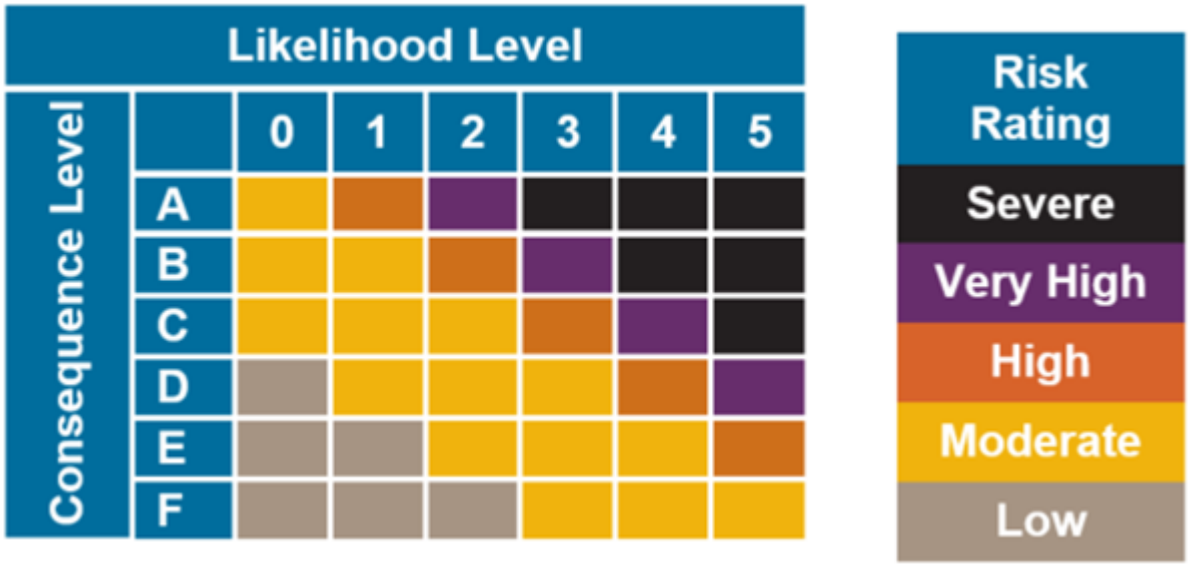


Figure 2-6: Woodside risk matrix – risk level

To support ongoing risk management (as a key component of Woodside's Process Safety Management Framework – refer to the implementation strategy in **Section 6.10**), Woodside uses the concept of 'current risk' and applies a Current Risk Rating to indicate the current or 'live' level of risk, considering controls that are currently in place and effective on a day-to-day basis. The Current Risk Rating is effective in articulating potential divergence from baseline risk, such as if certain controls fail or could potentially be compromised. Current Risk Ratings aid in communicating and making visible the risk events and ensure the continual management of risk to ALARP by identifying risk reduction measures and assessing acceptability.

2.7 Classification and Analysis of Major Environment Events

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

Woodside defines a MEE as an event with potential environment, reputation (pertaining to environment events), social or cultural consequences of level B or higher as per Woodside's Risk Matrix (**Figure 2-6**). MEEs are evaluated against credible worst-case scenarios that may occur when all controls are absent or have failed.

2.7.1 Major Environment Event Identification

The ENVID process identifies numerous sources of risk with differing consequence levels. These risks are screened for those risk events that meet the MEE criteria, and MEE risks are analysed further through detailed consequence modelling and probability/ frequency studies and examined for 'appropriateness' of controls in a bowtie risk assessment.

Risks that do not meet the MEE definition, although screened out of the MEE process, are still evaluated for ALARP and risk acceptability using the methodology described in **Section 2.8**. Some high consequence/low probability events which do not meet the MEE consequence threshold may still undergo additional consequence and probability assessment where they could have a high

adverse impact on the company's reputation or relationships with relevant persons, beyond requirement to demonstrate ALARP and acceptable risk levels following application of controls.

2.7.2 Major Environment Event Classification

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

2.7.3 Bowtie Analysis

MEEs are subject to more detailed analysis using the bowtie risk assessment technique, which illustrates cause outcome pathways for each MEE and controls in place to prevent the 'top event' or mitigate the consequences (outcomes). The key drivers for adopting the bowtie technique for MEEs are that it:

- identifies the controls (prevention and mitigation barriers) necessary to ensure the risk is acceptable and ALARP;
- supports the process of demonstrating ALARP (described in **Section 2.8.1**);
- enables verification of and linking to the relevant sections of the WMS that supports barriers;
- improves the capacity for lessons learnt and incident prevention by being able to directly relate causes of an incident to those controls that failed; and
- ensures greater visibility and granularity in the assessment process and enables complex risk scenarios to be presented in an easy to understand format.

The bowtie technique (an example bowtie diagram is shown in **Figure 2-7**) shows the relationships between the 'Causes' that may lead to a particular unwanted event ('Top Event'), together with the range of potential escalation paths that can lead to a variety of 'Outcomes' (or consequences). A bowtie also shows the preventive barriers that may prevent a Top Event from occurring specific to each Cause, and the mitigation barriers in place to limit the potential effects once the Top Event has been realised, specific to each credible MEE Outcome.

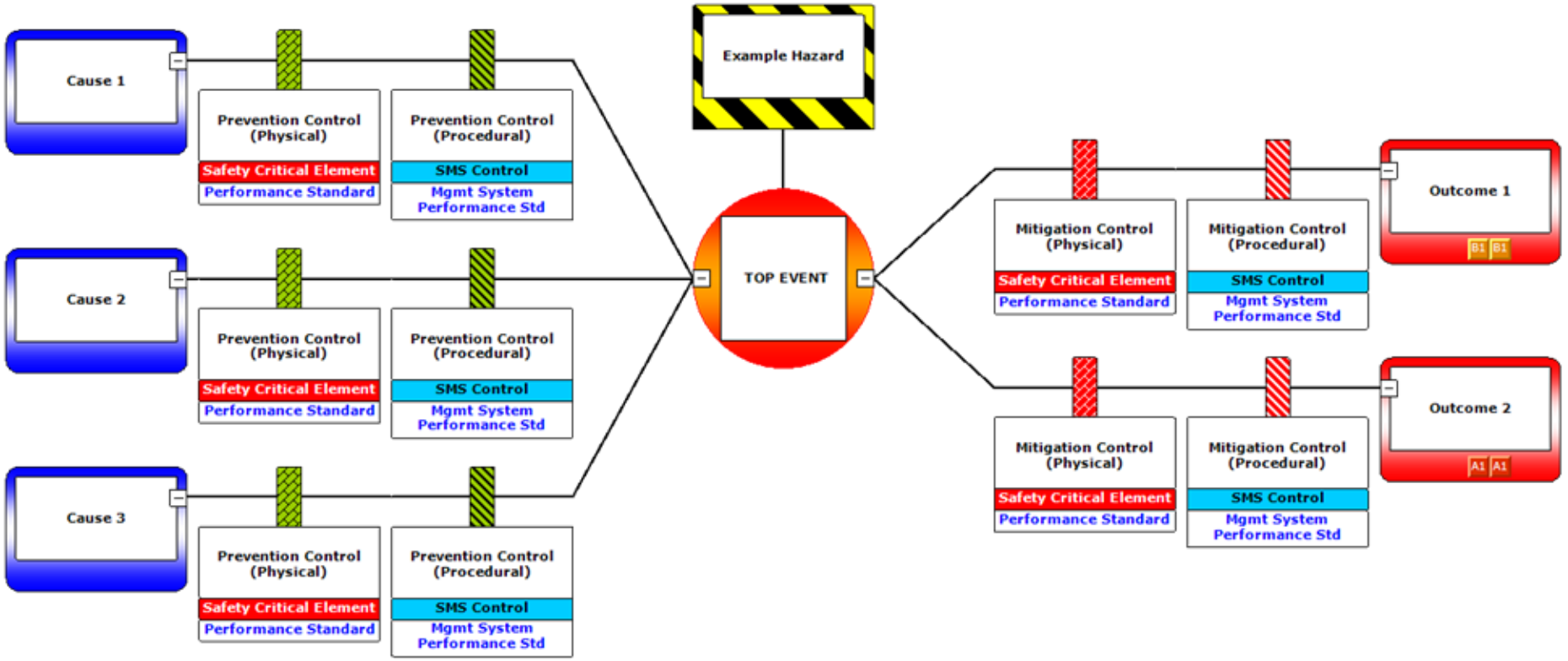


Figure 2-7: Example of bowtie diagram structure

2.7.4 Major Environment Event Register

A MEE Register is prepared for each production facility after completing the bowtie diagrams. The purpose of the MEE Register is to record the MEE identification process, groupings, bowtie diagrams and datasheets in a consolidated format. Datasheets are prepared for each MEE, which summarise the hazard description, hazard management, emergency response, ALARP summary and a list of critical barriers identified on the bowties (known as safety and environment critical elements (SCEs)).

Potential common causes that contribute to MAEs/MEEs, or that can result in failure or degradation of the controls in place to protect against MAEs/MEEs, include some generic mechanisms of SCE failure and generic human error. These are represented in bowties applicable to multiple MEEs and identified in the MEEs applicable to this EP.

2.7.5 Safety and Environment Critical Elements and Technical Performance Standards

Woodside identifies and manages SCEs technical and management system performance standards in accordance with Process Safety Management Procedures, Risk Management Procedures and Change Management Procedures (further described in the implementation strategy in **Section 6.10**). SCEs are identified for MAEs and MEEs. An SCE is a hardware control, the failure of which could cause or contribute substantially to, or the purpose of which is to prevent or limit the effect of a MAE, MEE or Process Safety Event. In addition, Woodside defines a Safety and Environment Critical Component (SCC) as an item of equipment or structure forming part of a hardware SCE that supports the SCE in achieving the safety function.

Once an SCE is identified as an MEE barrier for the operated facility, technical performance requirements are developed for the facility SCE in accordance with the Global SCE Performance Standards and process described in the SCE Management Procedure and form the SCE Facility Performance Standard. Each SCE Performance Standard represents a statement of the performance required of an SCE (e.g., functionality, availability, reliability, survivability). SCE Performance Standard requirements are used to establish agreed assurance tasks for each SCE, support the management of operations within acceptable safety and/or environment risk levels, and ensure continuous management of risk to ALARP. An assurance task is an activity carried out by the operator to confirm that the SCE meets, or will meet, its SCE Performance Standard. Examples of assurance tasks include inspection routines, maintenance activities, test routines, instrumentation calibration, and reliability monitoring.

SCE Facility Performance Standards do not always align directly with EPSs. They are used in conjunction with the WMS to identify and treat potential step-outs from expected controls performance or integrity envelopes and ensure SCE performance can be optimised. Woodside's HSE Event Reporting Guideline describes the process for identifying 'Failure to meet Facility Performance Standard', which is when the SCE does not meet the goal as stated in the relevant Performance Standard (see **Section 7.2.5**). Situations where SCEs fail to meet Facility Performance Standards represent a potential increase in risk that, if not addressed immediately, have the potential to result in a process safety event, or worsen the consequences of one. Recording SCE Failure to Meet Performance Standard Events into the Event Reporting Database is important to highlight risk, investigate causes, manage risks and meet potentially applicable external reporting requirements. For applicable SCEs, 'Failure to meet Facility Performance Standard' represent scenarios that may fail to achieve an EPS presented in this EP.

The results of the MEE classification and analysis for Julimar operations are presented in **Section 6.7.2** of this EP. More detail on the SCE and Performance Standards process, and the interrelationships to other parts of the SCE Management Procedures, is described in **Section 7.2.5**.

2.7.6 Safety-critical Management System Barriers

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

2.8 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 ESD – as defined under the EPBC Act
- internal context – ensuring the proposed controls and risk level are consistent with Woodside policies, procedures and standards (**Section 6.10**)
- 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 Regulations 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.

2.8.1 Demonstration of As Low As Reasonably Practicable

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 criteria for demonstrating 'as low as reasonably practicable'

Risk	Impact	Decision Type
Low and Moderate	***Negligible, Slight, or Moderate (D, E or F)***	***A***
Woodside demonstrates these risks, impacts and Decision Types are reduced to ALARP if: • identified controls meet legislative requirements, industry codes and standards, applicable company requirements and industry guidelines, or • further effort towards impact/risk reduction (beyond using opportunistic measures) is not reasonably practicable without sacrifices that are grossly disproportionate to the benefit gained.		
High, Very High or Severe	***Moderate and above (C, B or A)***	***B and C***
Woodside demonstrates these higher order Risks, Impacts and Decision Types are reduced to ALARP (where it can be demonstrated using good industry practice and risk-based analysis) that: • legislative requirements, applicable Woodside requirements and industry codes and standards are met; • societal concerns are accounted for; and • the alternative control measures are grossly disproportionate to the benefit gained.		

2.8.2 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 criteria for acceptability

Risk	Impact	Decision Type
Low and Moderate	***Negligible, Slight, or Moderate (D, E or F)***	***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.		
High, Very High or Severe	***Moderate and above (C, B or A)***	***B and C***
Woodside demonstrates these higher order Risks, Impacts and Decision Types are 'Acceptable if ALARP' if it can be demonstrated using good industry practice and risk based analysis (RBA), if legislative requirements are met and societal concerns are accounted for and the alternative control measures are grossly disproportionate to the benefit gained. In undertaking this process for Moderate and High risks, Woodside evaluates: • the Principles of ESD as defined under the EPBC Act; • the internal context – the proposed controls and consequence/risk level are consistent with Woodside policies, procedures and standards; • the external context – consideration of the environment consequence (**Section 6**) and stakeholder acceptability (**Section 5**) are considered; and • other requirements – the proposed controls and consequence/risk level are consistent with national and international industry standards, laws and policies ad consideration of applicable plans for management and conservation advices, conventions and significant impact guidelines (e.g., MNES). Additionally, Very High and Severe risks require 'Escalated Investigation' and mitigation. If after further investigation the risk remains in the Very High or Severe category, the risk requires appropriate business engagement with increasing involvement of senior management in accordance with Woodside's Risk Management Procedure to accept the risk. This includes due consideration of regulatory requirements.		

2.9 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 6.9**). The steps in this process are:

- Identify relevant listed threatened species and ecological communities (**Section 4.5**).
- Identify relevant recovery plans and threat abatement plans (**Section 6.9**).
- 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 6.9**).
- 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 6.9**).

2.10 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**.

2.11 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 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 6.10**.

2.12 Consultation

Woodside consults relevant persons in the course of preparing an EP in accordance with regulation 25 of the Environment Regulations. Woodside's consultation methodology is presented in **Section 5**. Woodside's consultation record is at **Appendix F**.

3. DESCRIPTION OF THE ACTIVITY

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 layout of the facility, the operational details of the activity and additional information relevant for consideration of environmental risks and impacts.

3.1 Project Overview

The NRC is a single integrated facility which is comprised of two platforms, the NRA platform and the NRB platform. The NRC was commissioned as an integrated drilling, production, utilities and accommodation facility. However, the NRC no longer has fixed drilling capability and drilling does not form part of the scope of this EP.

The NRC produces dry gas and condensate from three (3) reservoirs that are connected by subsea infrastructure. Three processing trains on the facility, Train 100 (T100), Train 200 (T200) and Train 300 (T300), process the production fluids via a series of cooling, separation, compression and dehydration processes before being exported to the first trunkline (1TL) and the second trunkline (2TL) via the Goodwyn Alpha Inter-field Line (GWA IFL). Production fluids are transported via 1TL and 2TL to the KGP. The extent of the trunklines that fall within State waters and the operation of the KGP does not form part of 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 Areas	WA-1-L
Pipeline Licences	WA-1-PL, WA-10-PL
Key components of facility	Two fixed and interconnecting platforms, processing equipment.
Key components of subsea infrastructure	Persephone subsea wells/Xmas trees, manifold, flowline, umbilical and associated control equipment. Gas export pipelines (trunklines), manifolds, umbilicals and associated control equipment.
Vessels	Platform support vessels, subsea support vessels, an accommodation support vessel
Key activities	• Routine production; • Routine IMMR of the platforms and associated subsea infrastructure; • Platform well intervention, workovers and well kill activities; • Well clean-up; and • Non-routine and unplanned activities and incidents associated with the above.

3.2 Location

The NRC facility is located in Commonwealth waters on the NWS in Production Licence Area WA-1-L, approximately 135 km north-west of Dampier and 23 km north east of Goodwyn Alpha (GWA) (**Figure 3-1**).

The facility stands in approximately 125 m of water. Gas and condensate produced from the NRC facility is exported via two 130 km trunklines, for processing. Product can be routed via the 40” first

(1TL) trunkline or the 42” second (2TL) trunkline. Approximately 105 km of the trunkline length is in Commonwealth waters. Associated subsea infrastructure includes the Persephone (PSP) pipeline, which extends 7 km north-east of NRC to the PSP field.

The NRC facility is marked on nautical maps and each platform is surrounded by a 500 m petroleum safety zone (PSZ) (**Figure 3-1**). The PSP pipeline, 1TL and 2TL are also marked on nautical charts. The coordinates and water depth at location of infrastructure as well as petroleum titles of the Petroleum Activities Program are presented in **Table 3-2**.

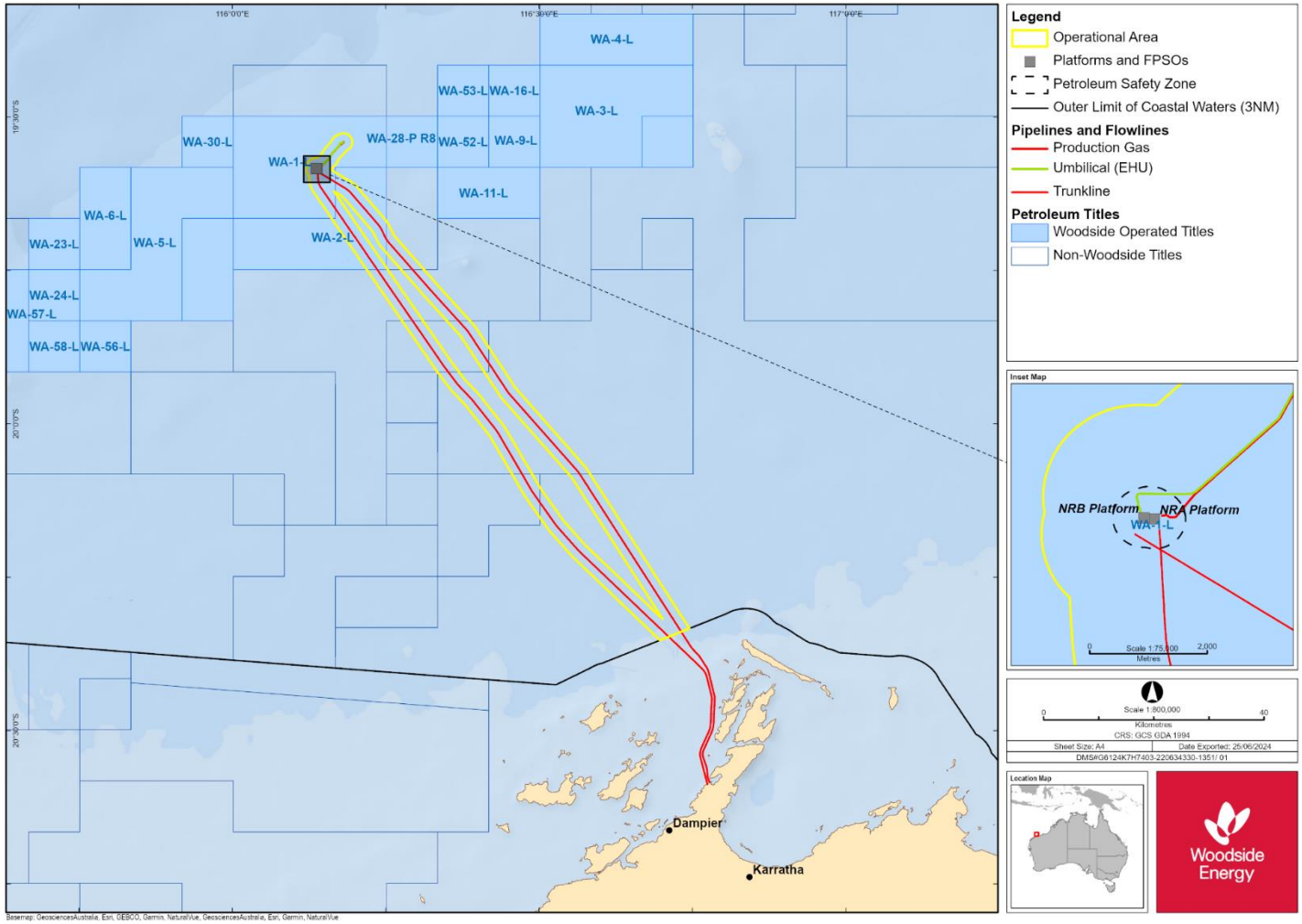


Figure 3-1: Location of the Petroleum Activities Program (NRC and PAA)

Table 3-2: Approximate location details for the Petroleum Activities Program including all relevant infrastructure.

Infrastructure	Water Depth (Approx. m LAT)	Latitude	Longitude	Petroleum Titles
North Rankin A Platform	125	19° 35’ 03.23”S	116° 08’ 17.06’E	WA-1-PL
North Rankin B Platform	125	19° 35’ 02.52”S	116° 08’ 11.32’E	WA-1-PL
1TL - First Trunkline tie-in point to NRA	125	19° 35’ 03.12”S -	116° 08’ 19.88”E -	WA-1-PL
1TL – First Trunkline at the State waters boundary	30	20° 20’ 49.49”S	116° 42’ 40.80”E	WA-1-PL
2TL - Second Trunkline tie-in point on the GWA Inter-field Line (IFL)	125	19° 35’ 07.94”S	116° 08’ 05.06”E-	WA-10-PL
2TL – Second Trunkline at the State waters boundary	30	20° 20’ 20.26”S	116° 43’ 54.17”E	WA-10-PL
Persephone Flowline (at PSA02 well)	125	19°32'24.30"S	116°10'49.96"E	WA-1-L
Persephone flowline (at NRC)	125	19° 35’ 03.23” S	116° 08’ 17.06’E	WA-1-L
PSA01 Well	125	19°32'25.02"S	116°10'50.88"E	WA-1-L
PSA02 Well	125	19°32'24.30"S	116°10'49.96"E	WA-1-L
22 platform wells from the North Rankin reservoir	125	19° 35’ 03.23” S	116° 08’ 17.06’E	WA-1-L
Seven (7) platform wells from the Perseus reservoir	125	19° 35’ 03.23” S	116° 08’ 17.06’E	WA-1-L

3.3 Petroleum Activities Area

The Petroleum Activities Area (PAA) defines the spatial boundary of the Petroleum Activities Program. The PAA consists of two Operational Areas (**Figure 3-1**):

1) The Export Trunkline Operational Area which includes:
    - An area 1500 m either side of both trunklines, 1TL and 2TL (between the NRC and the State waters boundary).
2) The Offshore Facility Operational Area which includes:

- An area within a 500 m radius around the NRC platforms (PSZ)
- An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL)
- An area within 1500 m of Persephone (PSP) subsea infrastructure.

Vessel activities within the PAA that form part of the Petroleum Activities Program are included in this EP. Vessel operations outside of the PAA do not form part of this EP but continue to be governed by applicable maritime regulations and other requirements.

3.4 Timing

The NRC operates 24 hours a day, 365 days a year. Maintenance activities are undertaken as required to support day-to-day operations.

Woodside continuously reviews opportunities for new tie-back opportunities for all offshore facilities. End of life of the NRC is currently planned for 2036/37. Any future drilling and tie-back activities as well as eventual decommissioning will be the subject to a separate EP(s).

3.5 Facility Layout and Description

This section provides a detailed description of the NRC facility.

3.5.1 Topsides

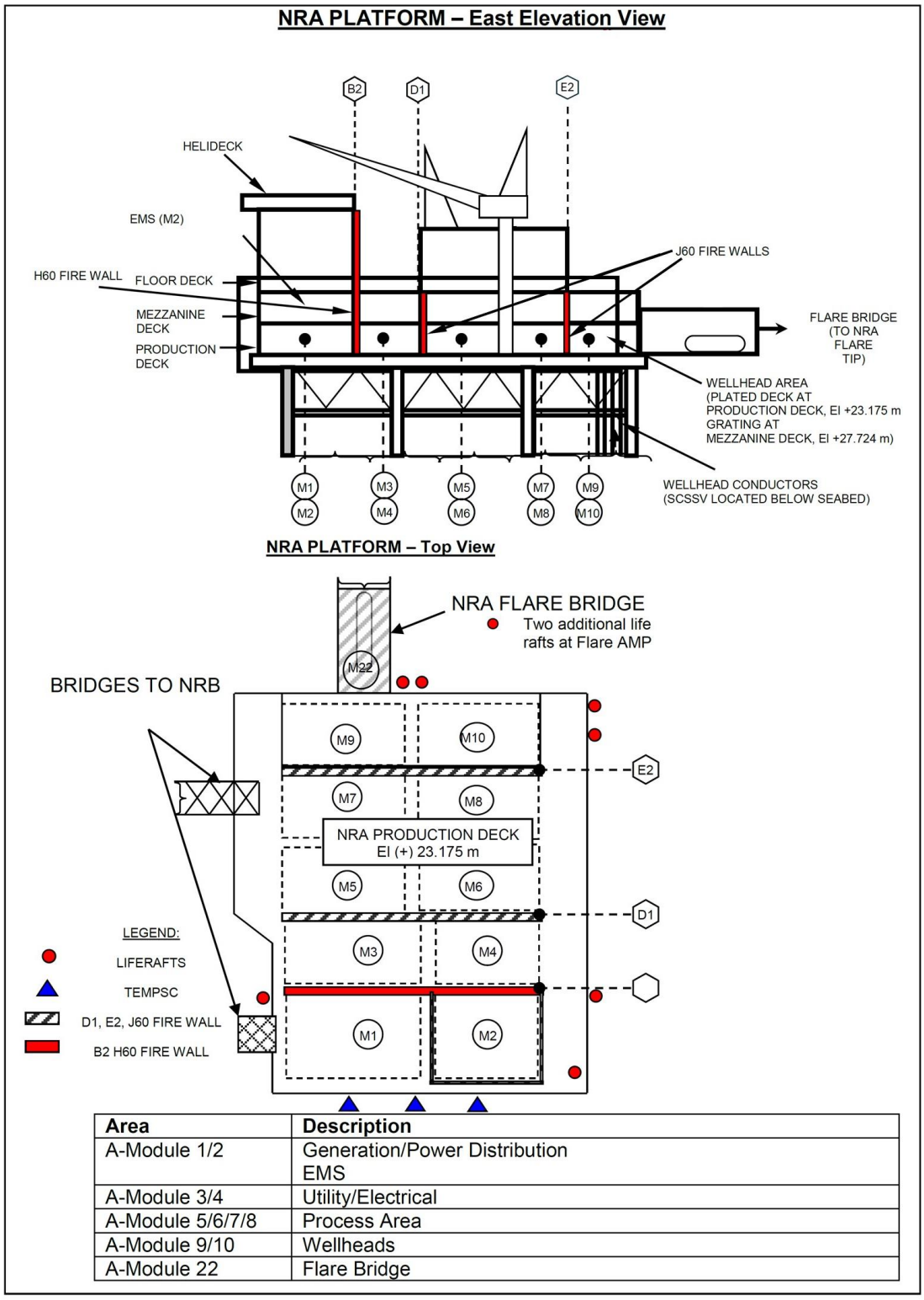
The NRA and NRB platforms are situated approximately 100 m apart and are connected by two bridges. The NRA platform consists of 23 topsides modules, as shown in (**Figure 3-2**):

- Modules 1/2: Generation / power distribution (Note: Gas turbine generators have been isolated and are out of service);
- Modules 3/4: Utilities;
- Modules 5-8: Process areas;
- Module 9/10: Wellheads;
- Module 11/12: Accommodation (unoccupied);
- Module 13: Instrument air compressor;
- Module 14: External crib;
- Module 15: Power generation;
- Module 16: Bulk storage;
- Module 17: Sack storage;

- Module 18: Mud pumps;
- Module 19: Derrick (redundant);
- Module 20: Mud processor (redundant);
- Module 21: Helideck;
- Module 22: Flare bridge; and
- Module 39: Under deck.

The NRA rises to ~71 m above sea level (top of flare stack) with the production deck at ~23 m above sea level. The NRB platform primarily provide separation and compression facilities to unlock low-pressure reserves from the North Rankin, Perseus and Persephone Fields (**Figure 3-3**). The NRB platform rises to ~135 m above sea level (top of flare stack) with the production deck at ~30 m above sea level.

The diesel powered, hydraulic driven pedestal mounted platform cranes perform lifting operations associated with supply and maintenance work scopes. Cranes are illustrated in (**Figure 3-2** and **Figure 3-3**).



Area	Description
A-Module 1/2	Generation/Power Distribution EMS
A-Module 3/4	Utility/Electrical
A-Module 5/6/7/8	Process Area
A-Module 9/10	Wellheads
A-Module 22	Flare Bridge

Figure 3-2: NRA topside module arrangement

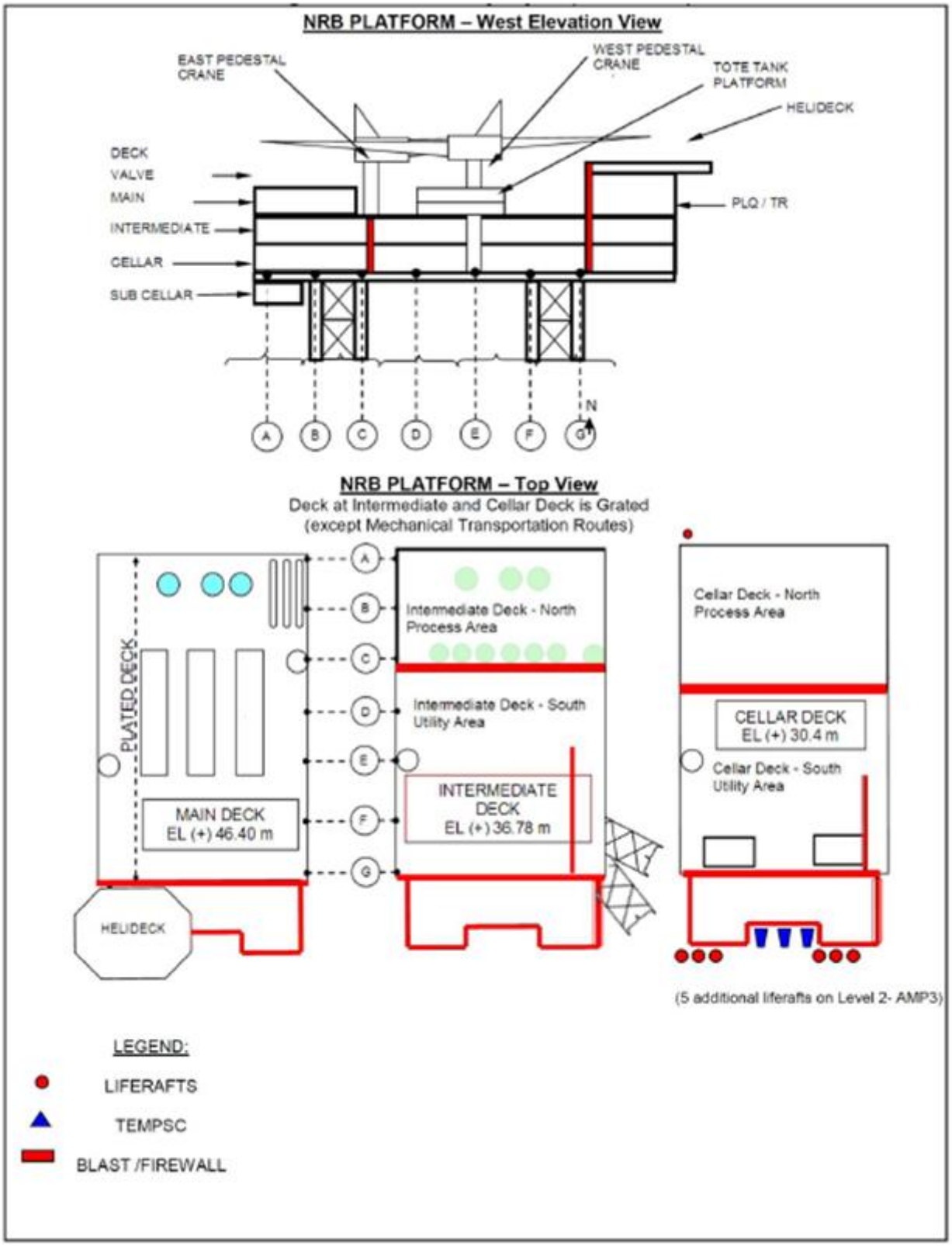


Figure 3-3: NRB topside module arrangement

3.5.2 Wells and Reservoirs

3.5.2.1 North Rankin

There are 22 platform wells on the NRA platform that produce from the North Rankin reservoir. Surface control sub-surface safety valves (SCSSV) are installed on wells as the emergency down-hole safety system. These fail-closed valves are controlled from the surface.

3.5.2.2 Perseus

There are seven platform wells that produce the Perseus reservoir from the NRA platform. SCSSV are installed on wells as the emergency down-hole safety system. These fail-closed valves are controlled from the surface via a single control line. Both NRC and GWA are producing the Perseus field.

3.5.2.3 Persephone

Two production wells within the Persephone reservoir are tied back to the NRC via a 7 km 12" flowline. Control and monitoring of the subsea wells are through an electrohydraulic umbilical from NRC. SCSSV are installed on wells as the emergency down-hole safety system. These valves are controlled from the surface via an electro-hydraulic umbilical from NRC to the Persephone trees.

3.5.3 Pipeline and Riser System

NRC receives production fluids (gas, condensate and associated produced water) from the wells on NRA and subsea wells, with the fluid then routed across the bridge for processing and compression on NRB prior to being routed back to NRA for gas dehydration and condensate dewatering. The export manifolds on NRA then send the processed gas and to KGP via the two trunklines, 1TL and 2TL.

3.5.4 Subsea Infrastructure

Given the North Rankin and Perseus reservoirs are produced to surface through platform wellheads there is no subsea infrastructure associated with these wells.

The Persephone field, however, is developed using subsea production equipment. This equipment is described below. Export gas from the NRC is via subsea export pipelines (trunklines 1TL and 2TL). The main components of subsea infrastructure are wells, Xmas trees, manifolds, umbilicals, risers, flowlines and export pipelines. The layout of the subsea infrastructure is shown in **Figure 3-4**.

The subsea system is controlled from the NRC CCR as follows:

- Umbilicals and flying leads provide hydraulic and electric power, communications and chemical supplies between the platform and subsea components.
    - Umbilicals run between the platform and Subsea Distribution Units (SDU);
    - Flying leads run between the SDU and the Xmas Trees;

Valves control subsea operations and processes;

- Choke valves control pressure and flow rates of hydrocarbons; and
- Subsea Control Modules (SCM) are sealed and pressure compensated electro-hydraulic units (found on manifold and/or Xmas trees) which encode & transmit subsea sensor values back to the host facility, and translate hydraulic pressure and control signals into subsea valve movements to control wells.

Subsea valves may be overridden manually from either a Remote Operated Vehicle (ROV) or by divers.

3.5.5 Field Inventory

The layout of the existing subsea infrastructure, including location of the fields is shown in **Figure 3-4** and **Table 3-3**.

Table 3-3: Inventory of key subsea infrastructure of the NRC and Persephone field, including status.

Infrastructure[1]	Status[2]	Decommissioning Planning
North Rankin Complex		
1 x UTA, 1 x PLEM, 1 x FLET, 1 x SSIV, 1 x valve station, 1 x integrated valve skid	Maintained for production	**Section 7.3.5**
4 x rigid spools (1 x 12", 2 x 30", 1 x 40" - total length ~665 m), 2 x flowlines (2 x 10", total length ~200 m), 2 x trunklines (1 x 40" [1TL] and 1 x 42" [2TL] – total length ~268 km)	Maintained for production	
3 x umbilicals (total length ~340 m)	Maintained for production	
1 x umbilical ~90 m	Maintained for decommissioning[3]	
Persephone		
2 x wells, 1 x manifold, 1 x UTA, 1 x COMMS termination assembly	Maintained for production	**Section 7.3.5**
1 x flowline (1 x 12", ~7 km)	Maintained for production	
1 x umbilical (total length ~7 km), 6 x jumpers, 1 x TELSTRA Installed Fibre Optic Cable	Maintained for production	

[1] Inventory of subsea infrastructure in the title areas or proposed to be installed in the title areas at time of submission of this EP

[2] Status at time of submission of this EP

[3] Redundant umbilical located in close proximity to live infrastructure and can't be removed

The subsea infrastructure is recorded and tracked using a database. This database is updated as equipment is brought into title, which may include new or replacement equipment. Remotely Operated Vehicle (ROV) as found and as left surveys are undertaken to identify the location of items placed on the seabed. At the completion of an IMMR campaign this data is used to update the inventory for the title. Material items dropped to the marine environment and not recovered are added to the inventory for the title.

The subsea system has been designed, fabricated and installed in accordance with best practice and international standards. The pipelines, flowlines and wells are marked on nautical charts.

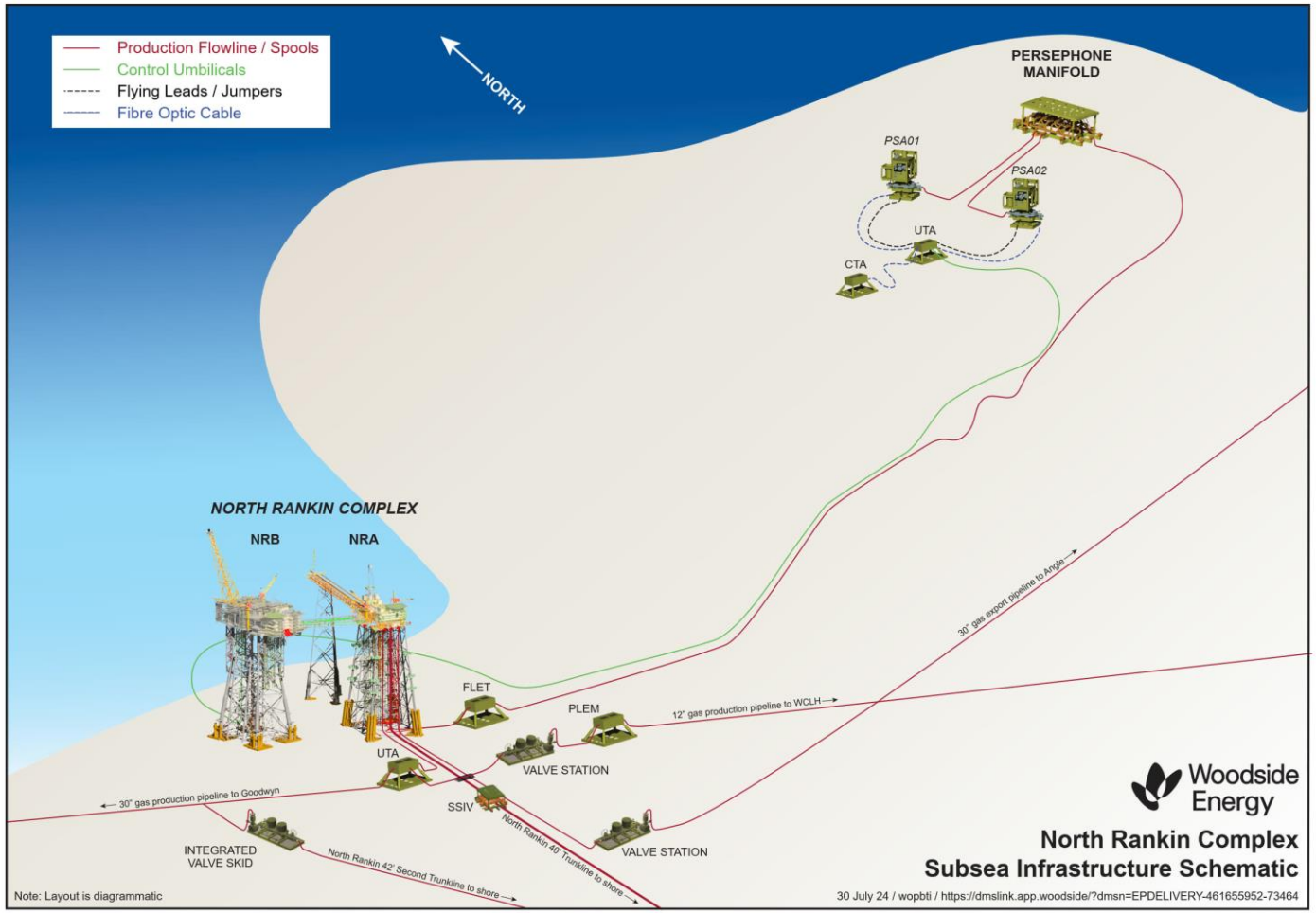


Figure 3-4: North Rankin Complex and subsea infrastructure

3.6 Other infrastructure

The following subsea infrastructure is not covered in the scope of this EP. This infrastructure, however, is adjacent to the NRC and partially fall within the footprint of the PAA for this EP:

- The 23 km, 30” IFL pipeline from GWA;
- The 50 km, 30” pipeline from Angel; and
- The 33 km, 12” Gas Export Line (GEL) from the Okha Floating Production Storage and Offloading vessel (FPSO).

The 1TL and IFL are connected to NRA topside though risers. All other pipelines are connected to either 1TL or Second Trunkline (2TL) via subsea tie-in assemblies for export to shore.

The NRC has full remote-control capability over Angel and supplies it with power via a subsea umbilical. Angel can be operated, monitored, controlled, restarted and diagnosed remotely from the NRC facility using a dedicated operating console which communicates with Angel via a fibre optic link carried in the submarine power cable that supplies it with electrical power.

The NRC also has remote monitoring capability over GWA and Okha.

3.7 Operational Details

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

- Manning and modes of operation (**Section 3.7.1**);
- Process description (**Section 3.7.2**);
- Produced Water (PW) system (**Section 3.7.3**);
- Drainage systems (**Section 3.7.5**);
- Utility systems (**Section 3.7.6**);
- Operational flaring (**Section 3.7.7**);
- Lifting operations (**Section 3.7.8**);
- Diesel bunkering (**Section 3.7.9**);
- Pipeline pigging operations (**Section 3.11.1.5**); and
- Safety features and emergency systems (**Section 3.7.10**).

3.7.1 Manning and Modes of Operation

The CCR is normally crewed 24 hours per day. Personnel numbers may vary dependent on activities scheduled, such as:

- Crew change;
- Engineering projects;
- Campaign maintenance;
- Inspections/audits;
- Cyclone down destaffing; and
- Planned facility shutdowns.

Modes of operation influence manning levels and include:

- Production and maintenance, including subsea IMMR activities;
- Platform well intervention, workovers and well kill activities;
- Major projects involve refurbishment, modification or major well maintenance on the facility;
- Remote operations; and
- Subsea export.

These modes of operation may occur concurrently.

3.7.1.1 Major Projects and Brownfield Modifications

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

- Caissons and associated utilities
- HVAC
- Cranes
- Well conductors
- Export compressors
- Laydown areas.

Potential environmental impacts related to projects are managed through the process outlined in **Section 6.1.3**.

3.7.1.2 Remote Operations

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

3.7.1.3 Subsea Export

The 1TL and 2TL receive export gas and condensate from production trains T100, T200 and T300. The trunklines also receive export gas from the Okha FPSO via the Gas Export Line (GEL) which is tied into 1TL approximately 150 m from the NRA platform or to 2TL via two 10-inch flexible flowlines connected to the GWA IFL tie-in spool approximately 50 m from NRA. The GEL is also used to import gas from either 1TL or 2TL to provide fuel to the Okha FPSO.

3.7.2 Process Description

3.7.2.1 Production Process

The NRC receives production well fluids (gas, condensate and associated produced water) for topside processing via gas dehydration and condensate dewatering. The facility then exports the processed gas and condensate onshore to the KGP for further processing.

The NRC has three processing trains (Trains 100, 200, 300) designed for a gas export capacity of 22 kT/day, per train, dry gas plus associated condensate. The individual compressor trains are specified for a higher mass rate to allow operation with two compressor trains online and three production trains. The compressor trains are therefore designed for a mass rate of 32 kT/day per train.

The peak condensate design rate is 1.9 kT/day per train, with a total condensate design rate of 5.7 kT/day. This peak rate is based on the maximum gas rate achievable by operating three production separators plus two compressor trains.

The gas export compressor takes suction at the lower operating pressures and returns the gas to export pressure allowing it to be routed onshore via the export headers. The export compression package (compressor, power generation turbine and associated equipment) includes the following equipment:

- Export compressor, intercooler and aftercooler;
- Gas generator;
- Power turbine;
- Gearbox;
- Lube oil systems;
- Dry gas seal system; and
- Suction Scrubber.

3.7.2.2 Flare Systems

The NRC flare system has the following functions:

- Protect process equipment and piping against overpressure that can be a result of system failure or fire;
- Collect hydrocarbons from blowdown valves (BDV) and dedicated pressure safety valves (PSV), and to lead them to a flare knock out (KO) drum where liquid is separated and returned to the process. The vapour is burnt safely through the flare system;
- Enable controlled depressurisation of systems containing hydrocarbons;
- Collect vapours from the process, most significantly from the glycol regeneration system; and
- Keep flare heat radiation and noise within acceptable levels.

NRA and NRB have independent flare systems. Each flare system has its own flare header, KO drum and flare tips, and disposes of gas derived from sources located on the respective platform. The bridge pipe work can be blown down via the NRB flare. The high pressure (HP) and low pressure (LP) flare systems dispose of gas and associated liquid vents from various systems on each platform. The flow of gas through each of the HP and LP flare networks is measured using separate ultrasonic flow meters with pressure and temperature compensation. The flares are equipped with pilots and a flame front generator (for flare ignition). The HP and LP flares along with the pilot lines are continuously purged with hydrocarbon gas to prevent air ingress into the system. Both the HP and LP flare flowrates are monitored and are alarmed to warn of purge loss.

3.7.2.3 High Pressure Systems

The NRA HP flare system collects vented hydrocarbons from process and utility systems, with design pressures of approximately 1,000 kPag or greater. The nominal process design pressure of topside equipment is 13,100 kPag. Two HP flare sub-headers receive the discharge from all relief and BDV from vessels and pipes in the gas and condensate processing streams (e.g. during blowdown). The HP flare system is also designed to receive the flow from the fuel gas scrubbers and well flows during well clean-up activities. The flare header is purged with fuel gas to maintain flare combustion and prevent air entering the system.

The NRA HP flare KO drum receives a flow of gas and associated liquid from the HP flare header. The HP flare KO drum is designed to separate entrained liquid droplets greater than 600 microns at the design capacity flowrate. Liquids collected in the drum are discharged away to the oily water settling tank (OWST) via the HP (or LP) KO drum pumps. Liquids in the HP flare KO drum can also be drained to the drain sump caisson. Vapours from the flare KO drum are disposed of at the flare tip.

The NRB HP flare system also collects vented hydrocarbons from process and utility systems, with design pressures of greater than 1,000 kPag. The flare system provides a means of safe disposal for all normal and emergency pressure releases (e.g. during blowdown). These releases flow into one HP flare header.

The NRB HP flare KO drum is also designed for the removal of liquid droplets 600 microns or larger at the design capacity flowrate. Liquids collected in the NRB KO drum are pumped via the NRB closed drains system to the NRA HP flare KO drum for further processing to the OWST. Vapours from the flare drum are disposed of at the HP flare tip.

3.7.2.4 Low Pressure System

The NRA LP flare system primarily collects vapours from the glycol regeneration process and the produced water degasser, and any other LP gases from vessels with design pressures of less than approximately 1,000 kPag. The LP flare system also provides an inert atmosphere in the LP storage tanks via the tank vent header. Gas discharged from the glycol regeneration system acts as a purge and eliminates the risk of air entering the LP flare system. The water captured from the process within the glycol regeneration system is boiled off and flared.

The NRA LP flare KO drum separates entrained liquid from the collected gas and discharges it to the OWST or drain sump caisson. The LP flare KO drum also receives liquids from the drain sump caisson. The KO drum is designed for the removal of liquid droplets 600 micron or larger at the design capacity flowrate. The LP flare tip burns the LP gas from the LP flare KO drum.

The NRB LP flare system provides a means of safe disposal of hydrocarbon releases from LP equipment items (equipment with operating pressures less than 1,000 kPag). Flows are directed into a header which in turn runs to the LP flare knock-out drum. No liquids are normally expected in the LP flare KO drum. Liquid drop out may accumulate over time and is routed to the closed drains drum. The LP header is continually purged to prevent air entering the header. A standard pipe flare tip, which is mounted within the physical boundary of the HP flare tip, burns the LP flare gases.

3.7.3 Produced Water System

Produced water (PW) is water brought to the surface from the reservoir during the production of oil and gas. PW can consist of produced formation water (a water reservoir below the hydrocarbon formation), condensed water (water vapour present within gas/condensate which condenses when brought to the surface), or a combination of both. PW is separated out from hydrocarbon components

during the production process and is discharged to the marine environment in accordance with legislative requirements.

In 2023, the NRC discharged 947 m^3 of PW on average per day. PW rates may increase over time as reservoirs age. Maximum discharge rates could be up to 1,900 m^3 per day based on PW processing capacity.

3.7.4 PW System Description

The PW system for the NRC is located on the NRA platform and consists of a degasser, two degasser water pumps, two centrifuges and a bypass line around the pumps and centrifuge (**Figure 3-5**).

The PW stream is primarily made up of:

- water recovered from the condensate stream by the NRB bulk water condensate separators;
- a lesser quantity of water removed by the NRA discharge scrubbers;
- water from the Oily Water Settling Tank (OWST), mainly from the glycol reboiler overheads, which is routed from the HP and LP flare KO drums; and
- water from NRA wet condensate vessel B, originating from the condensate coalescers.

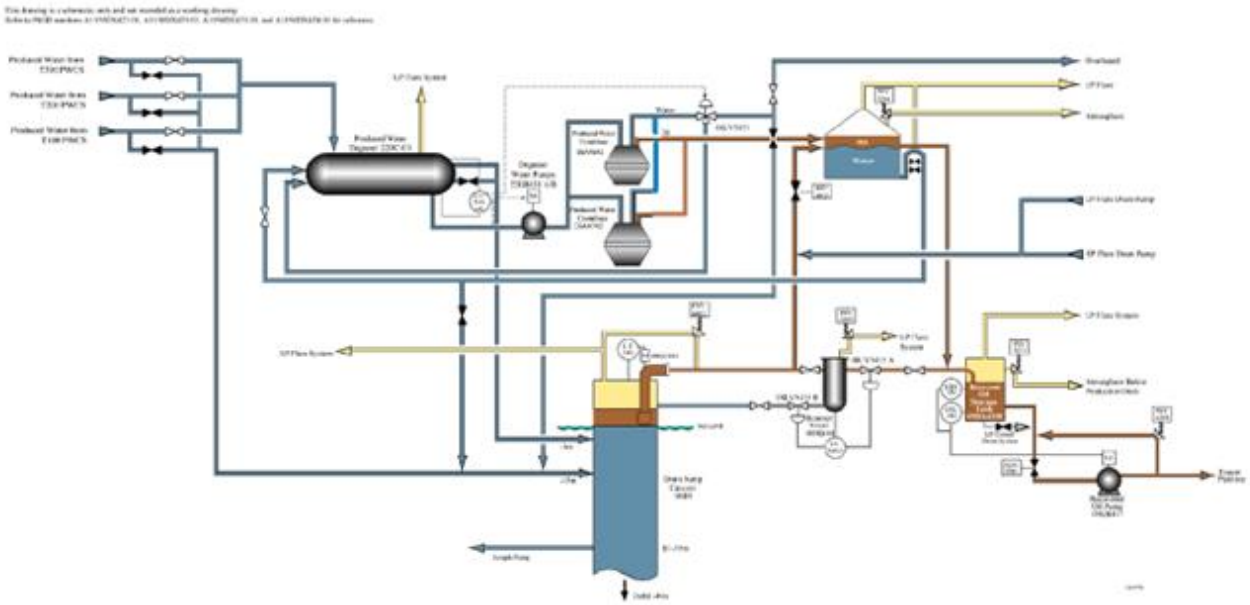


Figure 3-5: Schematic of the NRC facility PW system

3.7.4.1 PW Treatment

The PW system directs all PW streams from the process to the PW degasser to remove dissolved gas. The degasser allows mixing and provides a hold-up volume to ensure a uniform feed to the PW centrifuge(s), thus ensuring efficiency of the centrifuge is not affected by gas breakout. The system also returns water to the degasser and sends oil to the recovered oil tank on the NRA platform for export. The centrifuges are provided with a recycle loop back to the degasser for level control. When flowrates allow, this recycle also allows additional polishing of the water before it is discharged. If there is no centrifuge online, PW bypasses the centrifuge(s) and is directed from the degasser to the drain sump caisson. Once directed to the caisson PW is not immediately discharged to the

environment, and an additional level of oil/water gravity separation occurs within the caisson. The oil-gas and oil-water interfaces in the drain sump caisson are monitored by two independent level indicators. The drain sump caisson pump maintains the water-oil level within an operating band by pumping the oil layer to the recovered oil tank which can subsequently be pumped to the export pipeline. Water within the drain sump caisson is discharged to the environment at 40 m below sea level (as shown in **Figure 3-6**).

The measurement of oil in water (OIW) in the PW stream is undertaken using an online OIW analyser prior to discharge to the marine environment. The analyser is designed specifically for offshore operations and detects and measures soluble hydrocarbons (aromatic hydrocarbons) in water.

3.7.5 Drainage Systems

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

3.7.5.1 NRA Hazardous and Non-Hazardous Open Drains

The hazardous open drains collect normal deck drainage, including rainfall, wash down from equipment/flooring and any spillage from all areas designated as hazardous. These drains originate from deck floor drain boxes, tundishes and equipment drip trays located in hazardous areas. This fluid flows to the hazardous open drain's caisson for gravity separation. The NRA open drains caisson pump within the hazardous open drain's caisson transfers any accumulated oil from the caisson to the waste oil tank then to waste iso-containers for onshore disposal.

The main non-hazardous open drains, from sources not containing hydrocarbons, diesel or lubricating oils are collected via a separate header system and discharged directly overboard. These include reject water from potable water maker and water overflow from roofs.

Any non-hazardous area drains from equipment which potentially contains diesel, lubricating or seal oils, is directed through a collection header into the hazardous open drain's caisson via a seal pot. The seal pot prevents hydrocarbon vapour ingress into non-hazardous areas of the platform via the drains system. The seal provided is a 1 m liquid leg with a continual flush of service water.

3.7.5.2 NRB Hazardous and Non-Hazardous Open Drains

As with NRA, hazardous open drains on NRB collect normal deck drainage from all areas designated as hazardous. On NRB the hazardous open drain fluids are first routed to the hazardous open drains tank for gravity separation. Here, the drain collection headers are submerged in the tank to prevent vapour migration between the headers. The NRB recovered oil pump within the recovered oil caisson transfers any accumulated oil from the tank to waste iso-containers. The hazardous open drains pumps transfer accumulated oil from the hazardous open drains tank to waste iso-containers for onshore disposal.

The main non-hazardous open drains, from sources not containing hydrocarbons, diesel or lubricating oils are collected via a separate header system and discharged directly overboard. Any non-hazardous area drains potentially containing diesel, lubricating or seal oils are directed via a separate header and liquid seal to the hazardous open drains tank. This liquid seal (via a seal pot) maintains a 1 m liquid seal between hazardous and non-hazardous drains systems. For further protection against gas migration from the hazardous to the non-hazardous system, the header is submerged (approximately 1 m) below the hazardous header termination depth within the caisson.

3.7.5.3 Closed Drains / Recovered Oil System

The closed drains system is used for draining volatile hydrocarbon liquids from all normally pressurized and hazardous process equipment. Liquid sources are normally positively isolated and only drained to the closed drains system after depressurisation. To avoid overflowing the NRB closed drain drum, draining operations are performed in a controlled manner. During normal operation, the closed drains drum pumps route the liquids to the NRA HP flare KO drum for processing via the NRA recovered oil system (typical operation). If the NRA HP flare KO drum is unavailable, liquids can be directed to the NRB HP flare KO drum.

The closed drains system on NRA feeds into the NRA closed drains header, prior to transfer to the NRA flare KO drum. KO drum liquids from the NRB HP and LP flares also intermittently flow to the NRB closed drain system.

Well clean-up fluids are routed to the NRB HP flare KO drum which discharges liquids to the closed drain system. On both NRA and NRB, the system consists of drain headers which are sloped to allow fluids to flow by gravity to the closed drain drum (for NRB) and the NRA flare KO drum (for NRA). The closed drain drum vent ties into the LP flare system. The vent line ensures that the drum operates at the same pressure as the LP flare (normally atmospheric) and vapour associated with the drain fluids is routed to the LP flare.

The recovered oil system is located on the NRA platform. Recovered oil is separated from water and routed to the recovered oil tank while water is discharged back to the drain sump caisson. Oil is tested for water content and if less than 700 ppm can be pumped to the export line.

3.7.6 Utility Systems

3.7.6.1 Platform Lighting

The NRC has appropriate lighting to ensure a safe working environment to support 24-hour operations. Lighting is split between emergency and standard operational lighting. The emergency light fittings have been located to illuminate the designated escape routes on the facility. There are also battery backed-up emergency lights on the facility.

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

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

3.7.6.2 Heating Ventilation and Air Conditioning (HVAC) System

There are three main HVAC systems on the NRA for normal operations which provide pressurised, air conditioned, purge and exhaust air services to various modules. There are also secondary air handling units which supply supplementary cooling and are able to provide for the CCR/central equipment room (CER) thermal gain. This is an enclosed recirculation system and enables continued operational conditions in case of failure of the primary HVAC system, hence providing HVAC redundancy.

The HVAC system on NRB consists of ducted air conditioning systems that utilise a common chilled water system for cooling and dehumidification. Two main air-conditioned areas, the NRB accommodation area and equipment rooms, have separate air handling units. Each area also has separate ventilation systems providing recirculation and exhaust air where required. Additional HVAC systems are located on the two NRB cranes.

Ozone depleting substances are no longer used on the NRC and refrigerants are managed by a licenced Refrigerant Authority.

3.7.6.3 Water Systems

There are a number of water systems on the NRC providing water for process systems, utilities, fire protection and drilling as illustrated in **Figure 3-6**. Under normal operation all water is drawn from the ocean via seawater lift pumps.

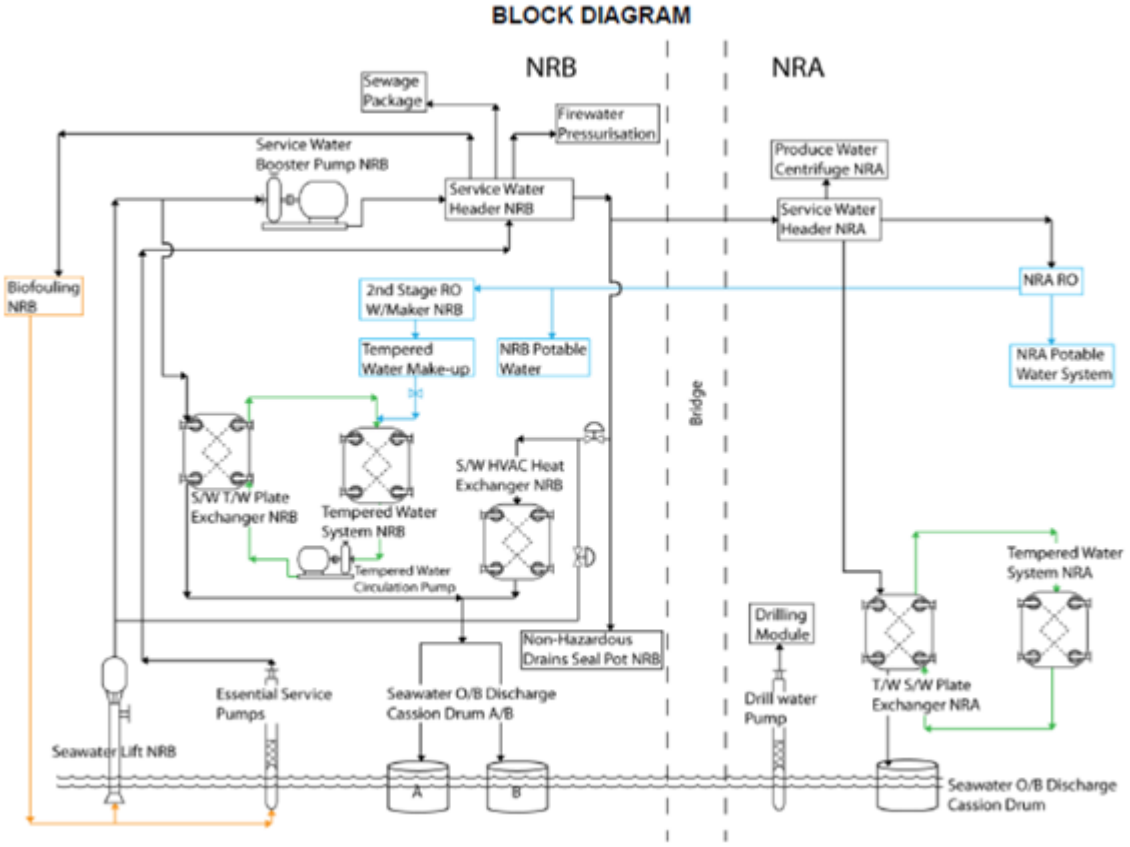


Figure 3-6: NRC water systems

There are two types of water systems on the NRC:

- Once through systems (a single pass cooling circuit) where seawater is drawn into the cooling system for end users e.g. heat exchanger cooling, feed for potable water maker and fire water ring main for deluge.
- Closed Loop systems where the cooling medium is continuously circulated through heat exchangers for heat transfer e.g. chilled and tempered water systems.

The NRC Water Systems are described in the following sections.

3.7.6.3.1 Seawater / Service Water System

All seawater requirements on the NRC are supplied from the NRB Service System by four sea water lift pumps and two caissons.

The seawater pumps are rated to operate at approximately 5,000 m^3 per pump, per hour. Cooling water (CW) is discharged vertically through the two 1.6 m diameter caissons 3.7 m apart and approximately 15 m below the water surface. Typical discharge rates range from 12,300 to 16,500 m^3/hr, with temperatures varying from 34°C to 50°C (averaging approximately 45°C). An electro-chlorinator produces sodium hypochlorite by electrolysis of sodium chloride found in seawater. Sodium hypochlorite produced from the electro-chlorinator is continually injected into the suction side of the running seawater lift pump to prevent algal growth. The NRA seawater system is out of service and has been isolated.

The service water booster pumps make up the difference in pressure from the seawater lift pumps to the pressure required for the various users. The service water booster pumps effectively act as a firewater jockey pump, maintaining the firewater ring main pressure to prevent unnecessary start-up of the diesel driven firewater pumps. These booster pumps also provide the heli-decks on both platforms with suitable water pressure for instantaneous firefighting.

Service water can also be supplied by the essential services pumps, should the seawater lift and service water booster pumps be offline. The essential services pumps maintain pressure in the firewater ring main, supply water to the NRB HVAC system, seawater chlorination package, non-hazardous drains seal pot and spillback. The essential services pump caissons are dosed with sodium hypochlorite at the pump intake to prevent microbial growth in the service water system.

3.7.6.3.2 Tempered Water System

The tempered water system on both platforms provides indirect cooling by re-circulating chemically treated potable water to remove heat from process and utility coolers through a closed loop system. Tempered water is circulated around the system by the tempered water circulation pumps. The tempered water pumps take suction from the tempered water expansion vessel, which is located at the system high point. From the pumps, tempered water is fed to the plate heat exchangers where it is cooled by the seawater system. From these exchangers the tempered water is distributed to all users.

To prevent general corrosion, fouling and blockage of small passages in the heat exchangers, the tempered water systems are injected as required with oxygen scavenger, pH buffer and biocide. Periodic system maintenance may require the draining of the tempered water system, resulting in the discharge of water and residual treatment chemicals to the marine environment.

3.7.6.3.3 Potable Water

The potable water system desalinates seawater via filtration and reverse osmosis to produce potable water for both platforms. It is located on NRA, and water is transferred to NRB via piping across the bridge. Overflow potable water from the reverse osmosis (RO) unit is sent for storage in the NRA jacket leg, where it may be used for well maintenance or when additional supply to the platforms is required. The storage tanks can also be replenished from a supply boat if the potable water maker is inoperative.

The desalination unit is designed for a standard operating and discharge capacity. The unit discharges approximately 9.5 m^3/hr of wastewater with a salinity of 55-60 mg/L. Chemical additives include injection of a solution of sodium anti-scalant to prevent scale formation and sodium hypochlorite solution for chlorination.

3.7.6.4 Power Generation

The main power generation system consists of four Solar Mars 100 gas turbine-driven generators located on NRB, which deliver 6.6 kV power.

The NRA Solar gas turbine generators are out of service and have been isolated. All power to the NRC and Angel facilities are supplied from NRB. In normal operations the NRB generators are gas fired, with an automatic change-over to diesel firing in case of loss of fuel gas.

In the event of failure of main power generation and to keep essential and vital services operating, an emergency diesel generator (EDG) unit is provided on NRB. This unit can supply essential and vital loads on both platforms. It is fuelled from a diesel day tank which gives a 12-hour running reserve. During normal operation, the EDG remains on standby or may be used to supplement the main generation system. This allows for the safe shutdown of production and the restoring of normal power. The NRA EDG is used as a back-up to the NRA emergency power loads. It is fuelled via a diesel day tank which gives a 12-hour running reserve. The EDG's can be started remotely from the CCR.

3.7.6.5 Sewage and Putrescible Wastes

Sewage from the ablutions are macerated and disposed of to the ocean via the sewage caisson on each platform.

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

3.7.6.6 Sand Management

Production of sand is minimised where possible on the NRC. The primary approach used to manage sand on the NRC is to monitor and minimise sand production, primarily by controlling wellhead pressures. Uncontrolled sand production is undesirable and can pose a risk of erosion and deposition in vessels leading to increased wear and process system trips. Sand production is monitored on each well by real-time clamp-on acoustic sand detectors, which monitor noise created by the impact of a particle on a flowline bend. Ultrasonic testing of the flowlines is carried out periodically to detect erosion. Thermographic surveys to measure the temperature difference between the hotter produced fluids and the cooler deposited sand in production vessels can be conducted as required on vessels. Vessel entry and inspection for sand is carried out as required.

3.7.7 Operational Flaring

Flaring is expected to occur during a range of operational circumstances; key operational flaring events are explained in further detail in the following sections. Annual facility flare targets are used to assess facility flare performance and are set based on operational activities planned for the year.

3.7.7.1 Normal Operations

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

The continuous flows to the NRA LP flare (approximately 25,471tpa) are:

- flash gas from PW degasser; and
- glycol regeneration process, including still columns, surge drum and flash drum. The continuous flows to the NRA HP flare (approximately 2,343 tpa) are:
- HP Flare Header Purge and Pilot;

The continuous flows to the NRB HP and LP flare (approximately 2,696 tpa) are:

- Flare Header Purge and Pilot;
- Compressor seal gas vents; and
- Potential passing valves to flare such as PSVs and blowdown valves (BDVs).

3.7.7.2 Intermittent Process Upsets and Activities

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

3.7.7.3 Emergency Blowdown

The topsides equipment and piping are divided into isolatable sections, each with a dedicated blowdown valve (BDV). During an Emergency Shutdown (ESD), each section is separately depressurised to the HP flare. Each section contains a fail-open actuated BDV which allows blowdown of the entire platform inventory. Approximately 167 t of hydrocarbons is flared during each planned ESD.

3.7.7.4 Manual Depressurisation

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

3.7.7.5 Subsea Flowline Depressurisation

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

- Production flowline maintenance and critical leak-off testing (LOT);
- To facilitate remediation in the event of an unplanned hydrate blockage in the subsea flowlines;
- Flowline hydrate management;
- Over pressurisation of flowlines above integrity limit; and
- Suspension of redundant flowlines.

3.7.7.6 Estimated Flare Volumes

The amount of gas that may be flared on an annual basis is dependent on continuous and intermittent process sources, planned activities requiring flaring, and unplanned process upsets. The estimated annual amount of gas flared ranges between 30,000 and 30,500 tonnes.

3.7.7.7 Greenhouse Gas Emissions

The main sources of greenhouse gas (GHG) emissions associated with NRC production are shown in **Table 3-4**. GHG sources that are not part of the NRC facility (e.g. from onshore processing

emissions) are included for completeness. In the context of this EP, the emissions are classified as direct and indirect emissions.

Table 3-4: Direct and indirect GHG emissions sources associated with NRC Production

Emission type	Source	Location	Jurisdiction	Process
Direct	NRC facility process	Offshore	Commonwealth	GHG emissions associated with fuel, flares, fugitives and process vents
Indirect	Support vessels (on charter)	Offshore	Commonwealth	GHG emissions associated with engines and fugitives on vessels
	Onshore processing*	Onshore	State (WA)	GHG emissions associated with venting reservoir CO_2, combustion of gas as fuel, flares and fugitives associated with processing gas to products such as LNG, LPG, condensate and domestic gas
	Transport	Transit	Subject to consumer location	GHG emissions associated with transport of products to market, including regassification and distribution of LNG in customer markets
	Regassification, distribution and combustion by third party user	Market	Subject to consumer location	GHG emissions associated with combustion of products as part of power generation and other energy products within the final market

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

3.7.8 Lifting Operations

The cranes on each platform are as follows:

- NRA East crane;
- NRA West crane;
- NRA North crane;
- NRB East crane; and
- NRB West crane.

There are plans in place to use the NRA West crane to replace the NRA North crane which is currently out of service. After commissioning of the NRA West crane, the NRA North crane will be deconstructed and removed. Full crane coverage on NRA will be provided by the East and West crane.

3.7.8.1 Routine Lifting from Platform Support Vessels

Routine lifting operations primarily include transferring stores and equipment from a support vessel to the facility. Lifts can be conducted from any of the main cranes depending on weather conditions. Support vessels are equipped with dynamic global positioning system (DGPS) for holding station during lifting operations.

The types of 'lifted equipment' may vary but generally include containers or skips of various sizes containing stores and equipment required by the facility. Containers for supply of chemicals are also routinely lifted. Containers and skips are appropriately rated for offshore lifting.

Following the completion of offloading from supply vessels, the facility backloads items to be returned to shore. This includes containers, empty skips and skips containing waste for onshore disposal.

3.7.8.2 Lifting around the Facility

Once lifted to the lay down area, there may be a need for re-positioning of containers and skips to various locations throughout the facility. There may be occasions where a non-routine piece of equipment may need to be lifted. On these occasions, the equipment is packed up in a container or an approved lifting frame.

3.7.9 Diesel bunkering

Diesel is transferred to NRC in bulk from supply vessels via the east NRA bunkering station and stored in the jacket leg. The NRC diesel system is an integrated system across both NRA and NRB platforms. Bunkering, storage, pumping and treatment facilities are located on NRA, supplying diesel fuel at correct pressures to all NRA and NRB users. Unused diesel is recycled back to storage.

The system supplies purified diesel fuel, free of water and solid impurities, at the required pressure and flowrate to the:

- Dual-fuel main power generation (NRB);
- EDG day tank (NRB);
- Drilling generators (NRA);
- Crane day tanks (NRA and NRB);
- Black start generator (NRB);
- Firewater pump day tanks (NRB); and
- Lifeboats (NRA and NRB).

The crane pedestals of both the East and West cranes on NRB are used for diesel storage. The storage volume of the two pedestal tanks is approximately 184 m^3. The bulk diesel storage is provided by the NRA jacket leg, which has a capacity of 440 m^3. The overall diesel storage volume on NRC is 624 m^3.

3.7.10 Safety Features and Emergency Systems

A range of safety features and emergency systems have been integrated into the design and operation of the NRC to manage safety risk and associated major environment risk. The safety features and emergency measures in place are listed in the NRC Operations Safety Case.

3.8 Support Vessels

This section provides a detailed description of support vessels associated with the NRC including platform, subsea and accommodation support vessels.

3.8.1 Platform Support Vessel

Platform support vessels (PSVs) are utilised in a support capacity for transferring material and equipment to and from the facility. The specifications of the *Siem Thiima* (**Figure 3-7**) are presented

in **Table 3-5** as an example of a PSV with typical specifications. Vessels supporting the NRC facility may vary depending on vessel availability.

Typical PSVs use a DP system for position keeping. This in turn minimises risks of physical interaction with subsea infrastructure. Vessels are equipped with anchors which may be deployed in the event of an emergency but are not used during operations as the vessels operate in DP, thus minimising the risk of seabed disturbance.

The current schedule is for a platform support vessel to visit the facility once per week. While in the field, the vessel also backloads materials and segregated waste for transportation back to the King Bay Supply Facility (KBSF) in Karratha, as well as carrying out standby duties during helicopter operations and working over-the-side activities.

Figure 3-7: Typical platform support vessel (Siem Thiima)

Table 3-5: Indicative platform support vessel specification (Siem Thiima)

Attribute	Details
Type	Platform support vessel
Length overall (LOA)	89.2 m
Breadth	19.0 m
Draft	7.6 m
Dead weight tonnage (DWT)	5,500 tonnes
Accommodation	Berthing for 25 personnel
Dynamic Positioning System	DP2
Fuel Capacity	964 m^3

3.8.2 Subsea Support Vessel

Subsea support vessels, including uncrewed surface vessels (USVs), are also used for field work such as subsea IMMR activities. Vessels supporting offshore activities may vary depending on operational requirements, vessel schedules, capability and availability.

Subsea activities are typically undertaken from a subsea support vessel or USV and may use an ROV with transponders. For some activities, ROVs may also be deployed from the NRC facility. Typical subsea support vessels use a DP system to allow manoeuvrability and avoid anchoring when undertaking works, due to the close proximity of subsea infrastructure. However, vessels are equipped with anchors which may be deployed in an emergency.

The DP system requires the temporary deployment of up to six transponders on the seabed. Transponders are also used for monitoring the location of infrastructure/equipment during a repair. The transponders are attached to small recoverable moorings (metal clump weight or tripod) that are lowered to the seabed and placed in position by ROV. The transponders have a small footprint; less than 0.5 m^2. The transponders and moorings are recovered using ROVs at the end of the activity.

ROV operations often require tool baskets which are temporarily placed on the seabed. These baskets typically have a mesh base with a seabed footprint of approximately 15 m^2. The baskets are recovered to the vessel at the end of the activity.

3.8.3 Accommodation Support Vessel

An Accommodation Support Vessel (ASV) may be required for short periods (typically < 1 month) to support planned maintenance campaigns, shutdown maintenance or major projects. ASV specifications vary depending on operational requirements and vessel availability. Typical ASV's use a DP system to avoid anchoring when in close proximity to the platform; these vessels are equipped with anchors which may be deployed in an emergency. Alternative ASVs may be semi-submersible with moorings installed by support vessels prior to arrival. ASV selection is based on seasonal requirements (cyclone vs non-cyclone season and duration of activity). Indicative ASV specifications are provided in **Table 3-6**.

Table 3-6: Indicative accommodation supply vessel specifications

Attribute	Details
Type	Accommodation Support Vessel
Length overall (LOA)	78.25 m
Breadth	21 m
Dead weight tonnage (DWT)	4,150 tonnes
Accommodation	55 persons approx.
Dynamic Positioning System	DP2 or moored semi-sub
Fuel Capacity	Largest tank <1,000 m^3

3.9 Helicopter Operations

Helicopters are the primary means of transporting passengers and/or urgent freight to and from the NRC. They are also the preferred means of evacuating personnel in the event of an emergency. Helicopter support is principally supplied from Karratha Airport. Approximately fourteen trips per fortnight are undertaken.

3.10 Hydrocarbon and Chemical Inventories and Selection

This section provides a detailed description of hydrocarbon and chemical inventories as well as associated selection processes.

3.10.1 Hydrocarbons

The main hydrocarbon inventories associated with topside process equipment is presented in MEE-03 **Section 6.7.5**. Non-process inventories of hydrocarbons used on the NRC are outlined in **Table 3-7**.

Table 3-7: Bulk inventories of hydrocarbons

Material	Storage Means	Storage Capacity	Isolation Arrangement
Diesel	Diesel storage tanks (x2)	NRA: 440 m^3 total NRB: 184 m^3 total	Permanent connection to process, pumped as required. Isolatable by valves.
Lube oil / seal oil / hydraulic oil	Various size containers based on type and use	Various – general 20 L and 250 L drums	Isolatable via equipment. Drums stored in appropriate areas as required for use.
HUC Lube Oil	Transferred in 4 m^3 containers, stored in pipe work / system vessels	75 m^3	Permanent connection to process. Isolatable by shutdown valves.
Hot Oil System	Storage tank	12 m^3	Permanent connection to process. Isolatable by shutdown valves
Drain Sump Caisson / Recovered Oil Tank	Storage tank	0.6 m^3	Permanent connection to process. Isolatable by shutdown valves

3.10.2 Chemical Usage

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

3.10.2.1 Operational Chemicals

3.10.2.1.1 Operational Process Chemicals

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

3.10.2.1.2 Operational Non-Process Chemicals

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

3.10.2.2 Maintenance Chemicals

Maintenance chemicals include those which are required for general maintenance or ‘housekeeping’ activities and are critical for overall maintenance of the facility and its equipment. These may include paints, degreasers, greases, lubricants and domestic cleaning products. They may also include chemicals required for specialty tasks, such as laboratory testing and analysis. Maintenance

chemicals generally present negligible risk to the environment as they are not discharged given the nature of their use (e.g. paint) or are used intermittently and discharged in low volumes (e.g. domestic cleaning products).

3.10.3 Indicative Chemical Inventories

An indicative list of bulk chemicals commonly used on the NRC, and estimated storage quantities, is summarised in **Table 3-8**. In addition to the chemicals listed, the NRC may also maintain other small volumes of various operational chemicals and facility maintenance chemicals.

Table 3-8: Indicative bulk inventories of chemicals

Material	Storage Means	Storage Capacity
Corrosion Inhibitor	Tote Tank	8 m^3 (4 m^3 per container)
Triethylene Glycol (TEG)	TEG storage tank	35 m^3
Monoethylene Glycol (MEG)	MEG storage vessel	8 m^3 (4 m^3 per container)
Biocide / pH Buffer / Oxygen Scavenger	NRB chemical injection skid	15 L containers
Demulsifier / Water Clarifier	Tote Tank	4 m^3 of each
Subsea Control Fluid	Hydraulic Power Unit Tank stores 'in use' fluid. Additional fluid stored in drums	~2 m^3
Coolant	Various sized containers	1 m^3
Aqueous Film Forming Foam (AFFF)	Tote Tank	1 m^3

3.10.4 Environmental Consideration During Selection, Assessment and Approval of Chemicals

As part of Woodside's chemical approval process, operational chemicals required by the Petroleum Activities Program are selected and approved in accordance with the Woodside Chemical Selection and Assessment Environment Guideline. This guideline is used to demonstrate that the potential impacts of the chemicals selected are acceptable and ALARP and meet Woodside's corporate requirements (as outlined in Woodside's Environmental Performance Procedure. This involves chemicals to be selected with the lowest practicable environmental impacts and risks subject to technical constraints.

A summary of the environmental requirements of the guideline is outlined below.

3.10.5 Environmental Selection Criteria

The Woodside Chemical Selection and Assessment Environment Guideline follows the principles outlined in the OCNS which manages chemical use and discharge in the United Kingdom (UK) and the Netherlands (background on the OCNS scheme is provided below).

Operational chemicals are assessed and selected in accordance with the Woodside Chemical Selection and Assessment Environment Guideline, specifically:

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

- If other OCNS rated or non-OCNS rated operational chemicals are selected, the chemical is assessed as follows:
  - If there is **no planned discharge** of the operational chemical to the marine environment, written technical verification of the 'no discharge' fate is provided and no further assessment is required.
  - If there is **planned discharge** of the operational chemical to the marine environment, a further assessment/ALARP justification is conducted.

The ALARP assessment includes consideration of chemical toxicity, biodegradation and bioaccumulation potential, using industry standard classification criteria (CEFAS scheme criteria).

If a product has no specific ecotoxicity, biodegradation or bioaccumulation data available the following options are considered:

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

If no environmental data is available for a chemical or if the environmental data does not meet the acceptability criteria outlined above, potential alternatives for the chemical are investigated, with preference for options with an HQ band of Gold or Silver or are OCNS Group E or D with no substitution or product warnings.

If no more environmentally suitable alternatives are available, further risk reduction measures (e.g. controls related to use and discharge) are considered for the specific context and implemented where relevant to ensure the risk is ALARP and acceptable.

Once the further assessment/ALARP justification has been completed, concurrence from the relevant manager that the environmental risk as result of chemical use is ALARP and acceptable is obtained.

3.10.6 Background Overview of the OCNS Scheme

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 with one of two schemes (as shown in **Figure 3-8**):

- **Hazard Quotient (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.

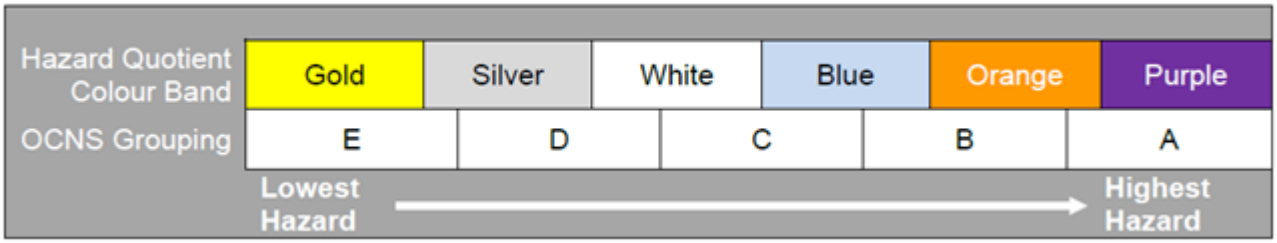


Figure 3-8: OCNS ranking scheme

3.11 Inspection, Monitoring, Maintenance and Repair Activities

3.11.1 Subsea Inspection, Monitoring, Maintenance and Repair Activities

Subsea infrastructure including the platform substructure and trunklines are designed to require minimal degree of intervention. Inspection, monitoring and maintenance activities, however, are undertaken to identify any signs of integrity loss and repair requirements. Subsea inspection, monitoring, maintenance, and repair (IMMR) activities are typically undertaken from a support vessel using a Remotely Operated Vehicle (ROV) and/or deployment of divers.

Typical IMMR activities, their purpose and approximate frequencies are described below.

3.11.1.1 Inspection

Inspection of subsea infrastructure is a recurring activity that involves assessment and verification of subsea infrastructure through remote (ROV) or direct visual (diver) observations. Scope and frequency of subsea infrastructure and trunkline inspections are determined using a Risk Based Inspection (RBI) methodology. **Table 3-9** provides details of typical subsea infrastructure inspections and surveys, their purpose and approximate frequencies.

Table 3-9: Typical subsea infrastructure inspections and surveys, their purpose and approximate frequencies.

Type of Inspection/Survey	Subsea infrastructure	Purpose	Approximate Frequency
General Visual Inspection	All subsea infrastructure, including exploration wellheads and platform jackets	Check general infrastructure integrity.	Varied – every 2-10 years
Close Visual Inspections	All subsea infrastructure	Investigate certain subsea infrastructure components.	Varied – every 2-10 years
Cathodic Protection	All subsea infrastructure	Check for corrosion and renew sacrificial anodes, if required.	Varied – every 2-10 years
Wall Thickness Surveys	Production and crossover manifolds, flowlines and pipelines	Monitor the condition of subsea infrastructure. (i.e. ultrasonic testing). Typically only performed if a specific threat is identified through other means.	Typical: Once every 25 years. Worst Case: Once every 5 years
Acoustic survey including Multibeam Sonar (MBES) and Side Scan Sonar (SSS)	Pipelines.	Identify buckling, movement, scour and seabed features. Low frequency/ intensity signals undertaken on the flowlines.	Varied – every 1-10 years . Approximately five days every four 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.	Varied – every 7 to 12 years
Seabed sampling surveys including minor grabs/cores	NA	Identify benthic fauna, sediment characteristics, determine level of penetration / compaction, etc. Grabs/cores typically disturb 0.1m^2 of seabed per sample.	Typical: Once every 25 years. Worst Case: Once every 5 years
Anode inspections and/or replacement	Production and crossover manifolds, trees, flowlines and pipelines	Samples taken of anode materials for testing.	Typical: Once every 25 years.
Marine growth sampling	All subsea infrastructure	Samples taken of marine growth for testing.	Typical: Once every 25 years. Worst Case: Once every 5 years
Sub bottom profiling	Around subsea components	Low frequency echo sounder undertaken to identify returns of metals under the seabed	Varied – every 1-6 years
Laser surveys	Dimensional check on spools	Used to conduct dimensional checks on spools etc. and measure proximity.	Varied – every 1-6 years

3.11.1.2 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, corrosion probes, corrosion mitigation checks, metocean and seismic monitoring, and cathodic protection testing. Other monitoring activities include process monitoring (temp, pressure, etc.), cyclone weather monitoring, and hydraulic fluid usage.

3.11.1.3 Maintenance

Maintenance activities on subsea infrastructure are those required at regular or planned intervals to prevent deterioration or integrity failure of infrastructure. Maintenance activities may include cycling of valves and flushing of chemical/hydraulic fluid lines as well as pressure and leak testing.

Table 3-10 provides details of typical subsea infrastructure maintenance activities, their purpose and approximate frequencies.

Table 3-10: Typical maintenance activities, their purpose and approximate frequencies

Type of maintenance	Subsea infrastructure	Purpose	Approximate Frequency
Cycling of valves via control system	Wells and manifolds	Test functionality of technical integrity valves	Every 6 months for well barriers during operations
Marine growth removal	Production and cross over manifolds and retrieval components (e.g. chokes) and jacket cleaning	Reduce weight or gain visual access	Based on outcomes from visual inspections and marine growth trends on regional infrastructure
Flushing of chemical hydraulic fluid lines	Hydraulic fluid lines	For repair scenarios	When required for repair
Leak and pressure testing	All subsea infrastructure	Test integrity of subsea infrastructure	Following installation of subsea infrastructure components after a repair or intervention, prior to return to service

3.11.1.4 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 presents an elevated level of risk to safety, health, and environment or production reliability. The purpose and frequency of these repairs are dictated by the outcome of the inspection and maintenance regimes described in **Table 3-9** and **3-10**. Typical subsea repair activities include, but are not limited to:

- Subsea control module (SCM) replacement;
- Hydraulic flying lead (HFL) replacement;
- Electrical flying lead (EFL) replacement;
- Pipeline or spool support with grout bag or mattress;
- Spool disconnection and/or replacement;
- Umbilical replacement;
- Riser or flowline replacement;

- Scour prevention installation; and
- Corrosion protection.

3.11.1.5 Pipeline Pigging Operations

Pigging involves sending an internal tool through a pipeline using a process medium. During the pipeline lifecycle, there may be a need to conduct pipeline (including flowlines) pigging for a variety of reasons (e.g. inspection, maintenance, repair or to facilitate modifications). Where required, subsea isolation valve operations are carried out from a ROV via a support vessel. The entire pipeline pigging system, including the launcher, receiver and the respective pipeline, is designed for maximum operation pressure of the production system.

3.11.1.6 Typical Environmental Impacts of IMMR Activities

3.11.1.6.1 Subsea Chemical Usage

Planned chemical discharges may occur during a range of subsea system operation and IMMR activities. However, these are either small volumes, or discharged intermittently. Operational chemicals to be used in the NRC subsea infrastructure are selected and assessed using Woodside's chemical selection and assessment procedures, as detailed in **Section 3.10**. Typical chemicals used in the subsea infrastructure may be released during IMMR activities. These include, but are not limited to:

- Control fluid – The control fluid used in the SSIVs controlled from NRC is HW525. The subsea control fluid that is used in the Persephone subsea system is Oceanic HW443. Hydrate control – MEG and TEG are used for hydrate control.
- Corrosion inhibitor – Corrosion inhibitor is generally used to manage and prevent corrosion within pipelines and flowlines.
- Biocide – Biocides are generally used to prevent the bacterial growth in pipelines that may cause corrosion.
- Dye – Chemical dyes are used to identify the source of a leak.
- Acid – Where removal of calcium deposits is required Woodside typically uses sulphamic (or equivalent) acid.
- Surfactant – Surfactants are formulated to remove water and organic deposits from pipelines.
- Grout – The material used in grout, mattresses and rock is typically concrete-based.

3.11.1.6.2 Typical Discharges During IMMR Activities

There are expected environmental discharges during subsea IMMR activities, for example during pressure and leak testing or flushing. Where possible, flushing is performed prior to disconnection of a subsea component to reduce residual hydrocarbon or chemical releases to the subsea environment upon disconnection. The flushing chemicals used for this activity may be supplied from either the facility or a chemical package via a downline from a support vessel. Where possible, flushed fluids will return to the platform and be processed and treated through the production system. **Table 3-11** below shows typical discharge volumes during different IMMR activities.

Table 3-11: Typical discharge volumes during different IMMR activities

Activity	Typical Discharge
Pressure and Leak Testing	Chemical dye <10 L
Flushing	Residual hydrocarbon or chemical releases volume is dependent upon injection port size, component geometry and pumping rates.
Hot Stab Change Out	Hydrocarbons or control fluid <10 L
Subsea Control Module Changeout	A typical release of acid is estimated to be 400 L and of control fluid is estimated to be 10 L.
Flowline and Umbilical Replacement	Typical releases of hydraulic fluid, MEG and corrosion inhibitor are estimated to be <10 L each.
Choke Change Out	Release of hydrocarbons <10 L and a typical release of MEG is estimated to be 280 L.
Spools Repair, Replacement and Recovery	Typical releases of hydrocarbon, MEG and corrosion inhibitor are estimated to be <10 L each.

3.11.1.6.3 Marine Growth Removal

Marine growth will form on hard substrates including subsea infrastructure and it is often necessary to this to be removed to enable subsea IMMR activities. Marine growth removal is undertaken with a ROV or by a diver. The different techniques are described in **Table 3-12**.

Table 3-12: Marine Growth Removal Methods

Activity / Equipment	Description
Water jetting	Uses high pressure water to remove marine growth.
Brush systems	Uses brushes attached to a ROV to physically remove marine growth.
Acid (typically Sulphamic Acid)	Chemically dissolves calcium deposits.

3.11.1.6.4 Sediment Relocation

If sediment builds up around a pipeline or other subsea infrastructure, a ROV-mounted suction pump/dredging unit may be used to relocate sediment to allow inspection/intervention works to be undertaken. This activity is limited to the relocation of sediment in the immediate vicinity of the subsea infrastructure. Sediment relocation typically results in minor seabed disturbance and some localised turbidity.

3.11.1.6.5 Suspend and Preserve Redundant Equipment

Equipment that reaches end of useful life may be preserved and suspended on the seafloor until decommissioning.

3.11.2 Platform Well Management and Maintenance Activities

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

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

3.11.2.1 Well Intervention

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

Well interventions may include the following activities:

- Wellhead maintenance (including actuator, valve, choke and tree change outs);
- Annulus fluid top-ups and Echo meter shots;
- Electric-line, slick-line and coiled tubing interventions;
- Logging or surveys;
- Fishing junk or lost-in-hole equipment;
- Setting and recovering plugs and wireline insert subsurface safety valves;
- Mitigating safety critical failures (e.g. failed safety valve);
- Chemical squeeze operations; and
- Perforating the wellbore.

3.11.2.2 Routine Wellhead Maintenance

Wellhead maintenance is conducted routinely on all surface wellheads/trees in accordance with the Facility Well Integrity Management Plan. Wellhead maintenance consists of greasing and functioning the wellhead tree valves and replacement of any non-serviceable items. Integrity testing of the valves is also completed and recorded by the facility.

3.11.2.3 Well Workover

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

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

3.11.2.4 Well Kill

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

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

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

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

A mobile well kill unit may be mobilised to NRC as required for platform well management and maintenance activities.

3.11.2.5 Management of Activities

During intervention and workover activities, well control for the prevention of any release of reservoir fluids to the environment is achieved by various barriers such as plugs (including deep set), kill fluids and BOPs. Two or more confirmed barriers are maintained under normal circumstances and in cases with fluid columns being maintained, wells are continuously monitored for kicks. Should a barrier fail or if a kick is detected, appropriate actions (consistent with good oil field practice and standards) are undertaken to restore barrier integrity and/or well control. As the work being undertaken on the NRC relates to production wells, the reservoir pressure is known and therefore, the potential for kicks is low; especially if the fluid level is maintained.

3.11.2.6 Chemical Use and Discharges

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

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

3.11.2.7 Well Unloading and Clean-up

Following interventions, workovers and well kills, wells may be unloaded and flowed via the process facilities to be cleaned up of remaining chemicals and fluids in the wellbore or reservoir. During this phase, products may be processed as follows:

- gas: routed into the production process where possible, or flared;
- fluids: routed to the HP flare KO drum which discharges liquids to the hazardous closed drain system; and
- wastes (may include fluids and sand / solids): managed as appropriate to composition. Solids are separated for onshore disposal. An additional strainer may be placed in the flowlines to

remove any large debris that may be present within the wellbore prior to arrival at the main separators.

4. DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

In accordance with Regulation 21(2) and 21(3) of the Environment Regulations, this section describes the existing environment that may be affected (EMBA) by the activity (planned and unplanned, as described in **Section 2.10**), including details of the particular relevant values and sensitivities of the environment, which were used for the risk assessment.

The EMBA is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment.

The EMBA represents the predicted spatial extent, in the event of the worst-case credible spill, of surface and in-water hydrocarbons at concentrations above ecological impact thresholds. The EMBA 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 EMBA is a composite of a large number of theoretical paths, integrated over the full duration of simulations and under metocean conditions representing prevailing conditions over a full year. For the activity covered by this EP, theoretical paths informing the outline of the EMBA were predicted from two scenarios:

1) A worst-case credible platform well loss of containment from topsides resulting in a surface release.
2) Worst-case credible subsea loss of containment from a trunkline resulting in a subsea release at the mid-point between the NRC and the KGP as well as at the State waters boundary.

The ecological impact thresholds used to interrogate simulation outcomes are defined in Section 6.7.2. 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 6.7.2**. 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 (MPAs) (Section **4.8**), National and Commonwealth Heritage Listed places (Section **4.9.8**), areas of tourism and recreation (Section **4.10.3**), and commercial and traditional fisheries (Section **4.10.1** and Section **4.10.2**, respectively).

The EMBA and socio-cultural EMBA are shown **in Figure 4-1** and described in **Table 4-1**.

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

Hydrocarbon type	EMBA[1]	Socio-cultural EMBA[1]	Planning area for scientific monitoring
Surface	10 g/m^2 This represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g., to birds and marine mammals) are expected to occur.	1 g/m^2 This represents a wider area where a visible sheen may be present on the surface and, therefore, the concentration at which socio-cultural impacts to the visual amenity of the marine environment may occur. However, it is below concentrations at which ecological impacts are expected to occur. This low exposure value also establishes the planning area for scientific monitoring (NOPSEMA Environment bulletin: A652993, April 2019).	

Hydrocarbon type	EMBA[1]	Socio-cultural EMBA[1]	Planning area for scientific monitoring
Dissolved	50 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA Environment bulletin: 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 Environment bulletin: A652993, April 2019). This area is described further in **Appendix D** and **Figure 4-1**. In the event of a spill, DNP will be notified of AMPs which may be contacted by hydrocarbons at this threshold.
Entrained	100 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA Environment bulletin: 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.		
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.***

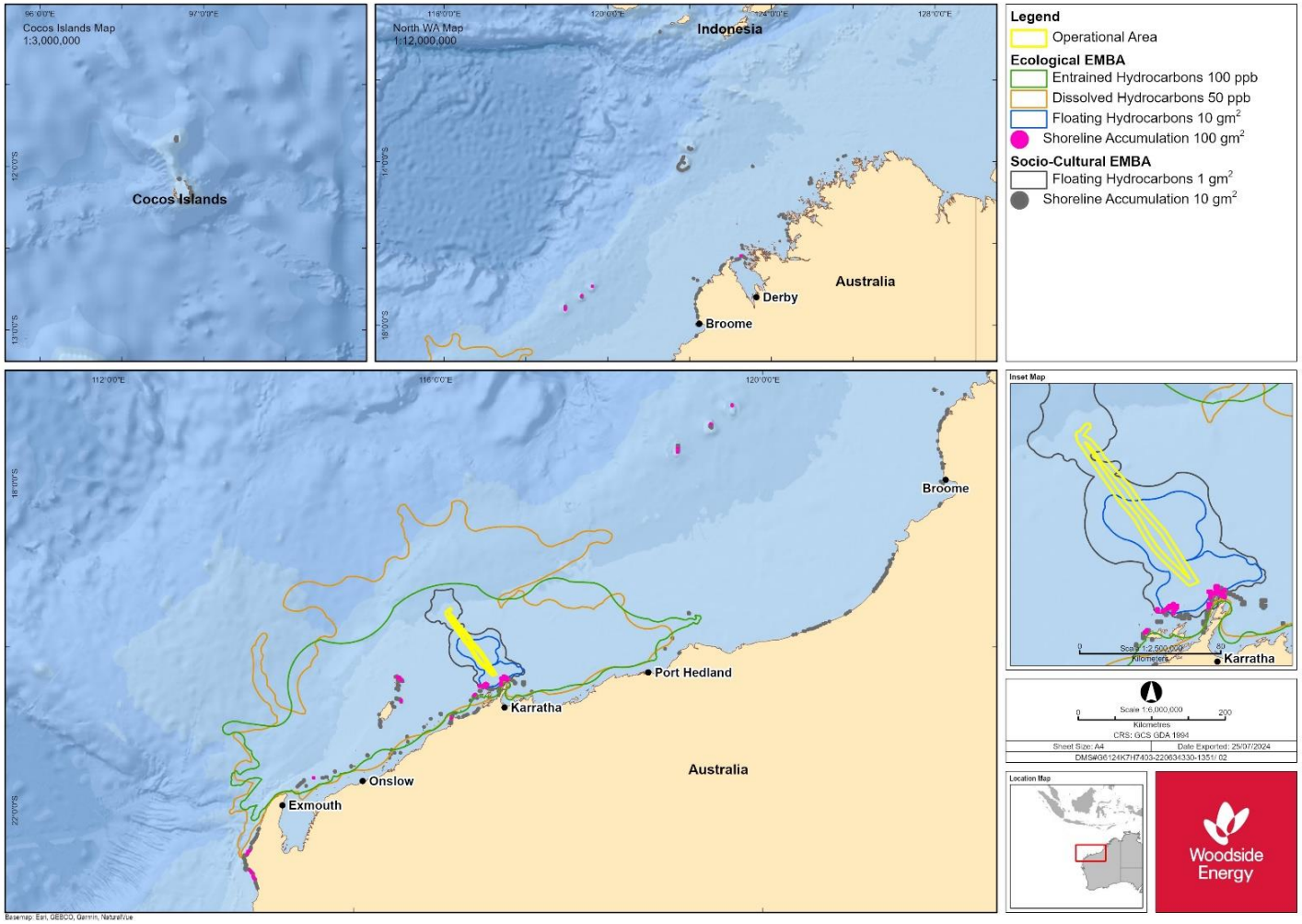


Figure 4-1: Environment that may be affected by the Petroleum Activities Program

4.2 Regional Context

The Offshore Facility Operational Area and Export Trunkline Operational Area are located in Commonwealth waters within the North-west Marine Region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0) (Commonwealth of Australia, 2006). Within the NWMR, the PAA lies within the Northwest Shelf Province (**Figure 4-2**). Woodside's Description of the Existing Environment (**Appendix C-1**) summarises the characteristics for the relevant marine bioregions.

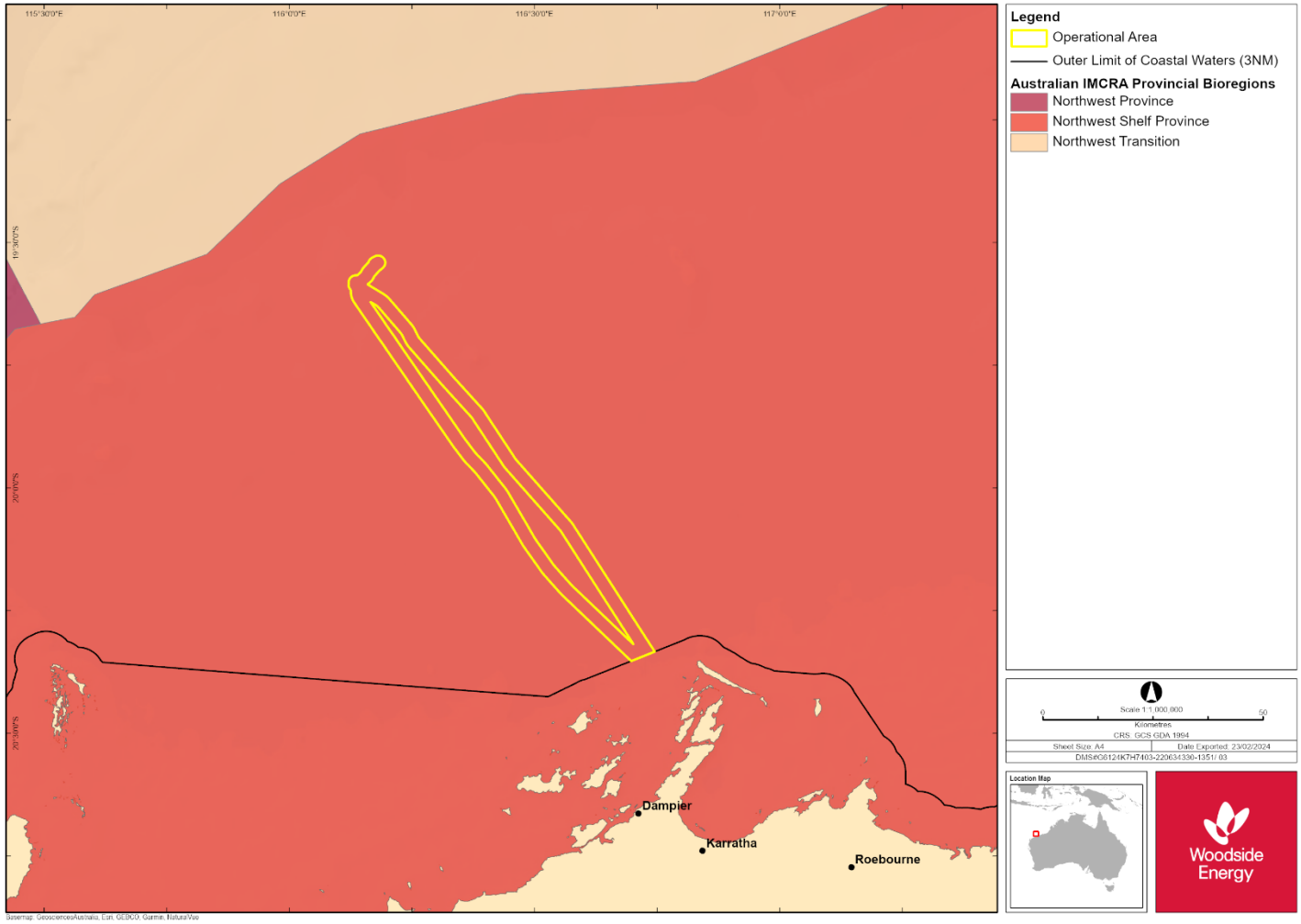


Figure 4-2: Location of the PAA and relevant marine bioregions

4.3 Matters of National Environmental Significance

Table 4-2 and **Table 4-3** summarise the MNES (as defined by the Environment Protection and Biodiversity Conservation Act), overlapping the PAA and EMBA, respectively, according to Protected Matters Search Tool (PMST) results (**Appendix C-2**). It should be noted that the PMST is a general database that conservatively identifies areas in which protected species have the potential to occur. The PMST conducts searches to determine the presence/absence of MNES based on a conservative grid based search function. Marine areas (>30 km) from the coast) use 32 km x 32 km grid cells to determine the spatial overlap with listed MNES. Accordingly, the PMST report (Appendix C-2) can indicate that features are present, that do not actually intersect with the Operational Area or EMBA. To ensure the accurate consideration of any impacts from the Petroleum Activities Program on MNES, shapefiles (provided by DCCEEW) have been assessed using Geographic Information System software to determine the actual presence and distance to MNES.

Additional information on these MNES is provided in subsequent sections of this chapter and described in detail in **Appendix C-1**.

Table 4-2: Summary of MNES identified by the PMST as potentially occurring within the PAA

MNES	Number	Relevant section
World Heritage Properties	0	**Appendix C-1**
National Heritage Properties	1	**Appendix C-1**
Wetlands of International Importance (Ramsar)	0	**Appendix C-1**
Commonwealth Marine Area	2	**Appendix C-1**
Listed Threatened Ecological Communities	0	**Appendix C-1**
Listed Threatened Species	38	**Appendix C-1**
Listed Migratory Species	54	**Appendix C-1**

Table 4-3: Summary of MNES identified by the PMST as potentially occurring within the EMBA

MNES	Number	Relevant section
World Heritage Properties	1	**Appendix C-1**
National Heritage Properties	2	**Appendix C-1**
Wetlands of International Importance (Ramsar)	0	**Appendix C-1**
Commonwealth Marine Area	2	**Appendix C-1**
Listed Threatened Ecological Communities	0	**Appendix C-1**
Listed Threatened Species	55	**Appendix C-1**
Listed Migratory Species	63	**Appendix C-1**

4.4 Physical Environment

The PAA lies on the NWS of the NWMR, with a seabed characterised by calcareous gravel, sand, and silt. The bathymetry within the PAA is generally flat (Figure 4-3), which is consistent with the broader NWS Province shelf region (Baker er al., 2008). The seabed has a gentle (0.05°) seaward gradient, extending to a relatively steep outer slope approximately 200 to 300 km offshore in water

depths approximately 200 m (Dix *et al*., 2005). The continental slope then descends more rapidly from the shelf edge to depth greater than 1000 m to the north-west (James *et al*., 2004).

Sediments in the PAA are expected to be broadly consistent with those in the NWS Province, and this has been validated by Woodside in sampling programs undertaken at Glomar Shoals and the Goodwyn A (GWA) platform (Australian Institute of Marine Science (AIMS) 2014a, BMT Oceanica 2015a). Sediments in the outer NWS Province are relatively homogenous and are typically dominated by sands and a small portion of gravel (Baker *et al*. 2008). Fine sediments (e.g. muds) increase with proximity to the shoreline and the shelf break, but are less prominent in the intervening continental shelf (Baker *et al*. 2008). Carbonate sediments typically account for the bulk of sediment composition, with both biogenic and precipitated sediments present on the outer shelf (Dix *et al*. 2005). Beyond the shelf break, the proportion of fine sediments increases along the continental slope towards the Exmouth Plateau and the abyssal plain (Baker *et al*. 2008). Surveys conducted for the nearby Pluto export trunklines found that sediments were predominantly fine sand with variable proportions of coarser sand fractions, silt, shells and shell fragments, coral cemented materials (including calcarenite gravel and cobbles) (Sinclair Knight Mertz (SKM), 2007b; Woodside, 2006). The NRC export trunkline sediments are expected to be similar composition to the sediments found near the Pluto export trunklines.

The sediments in the PAA are expected to be comprised primarily of fine sands, very fine sands and silt, similar to those analysed at Glomar Shoals and GWA, approximately 46 km and 18 km from the PAA, respectively (AIMS 2014a, BMT Oceanica 2015a).

While hard substrates are not known to occur within the PAA, they occur in the region more broadly and can host more diverse benthic communities.

Appendix C-1 provides a summary of the physical characteristics of the environment within the EMBA and broader NWMR.

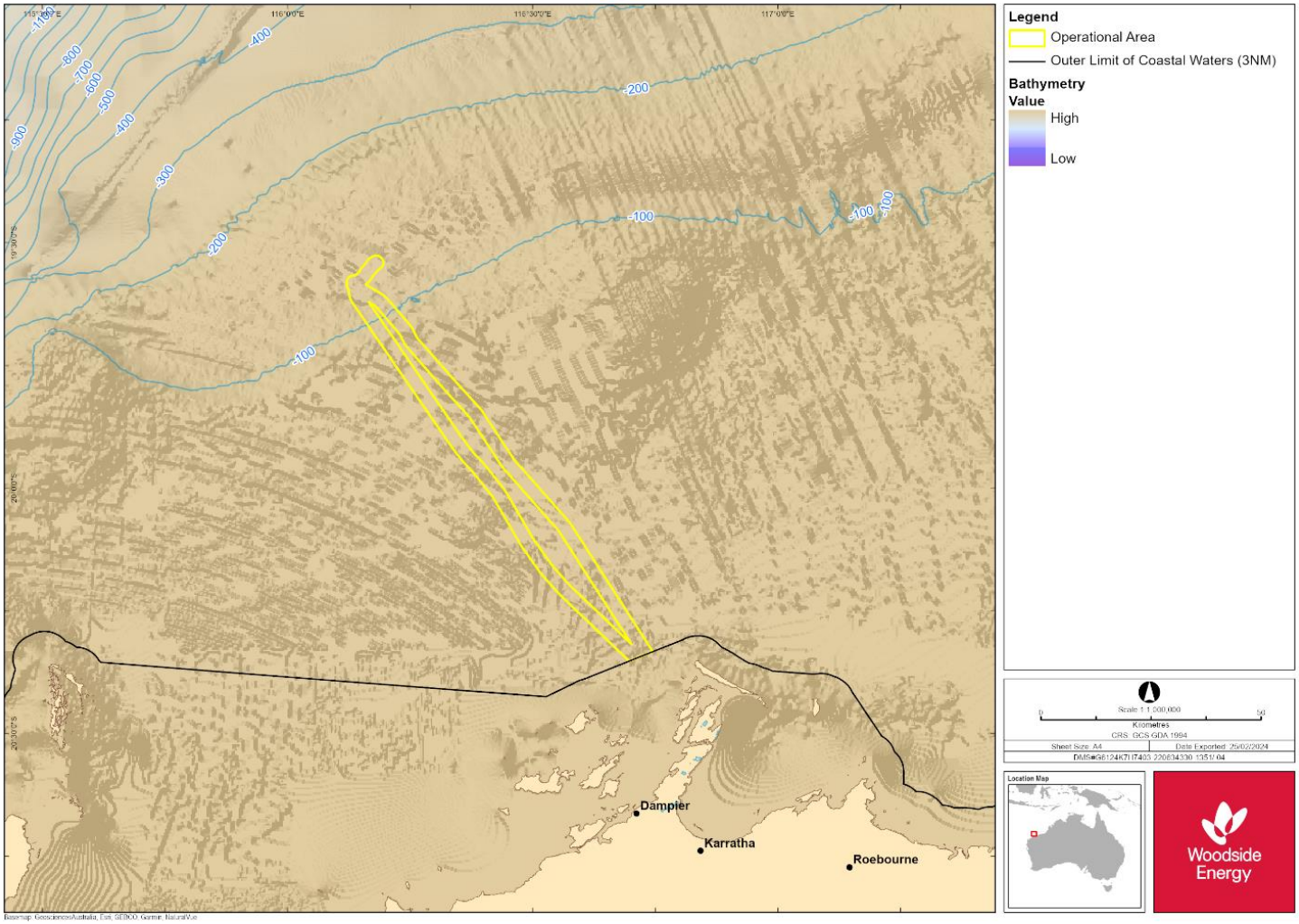


Figure 4-3: Bathymetry of the PAA

4.5 Habitats and Biological Communities

Key sensitive habitats and ecological communities within the EMBA are identified in **Table 4-4** and described in **Appendix C-1**.

Table 4-4: Key sensitive habitats and ecological communities within the EMBA (distances from PAA provided as relevant)

Habitat / community	Key locations within the EMBA
Seabed characteristics	
Ancient Coastline at 125 m Depth Contour	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, which forms the Ancient Coastline at 125 m depth contour KEF (the Ancient Coastline). The area gazetted as the KEF for the Ancient Coastline is discontinuous. The area is present throughout the NWMR and coincides with a well-documented eustatic stillstand at approximately 130 m worldwide (Falkner *et al*., 2009). The Ancient Coastline overlaps the Offshore Facility Operational Area and the EMBA**.** The escarpment type features may also potentially facilitate mixing within the water column due to upwelling, providing a nutrient rich environment. Recent surveys indicate that a large proportion of the seabed comprises of unconsolidated soft sediment habitat, such as sand, mud, and silt, supporting negligible epibenthic biota (Wakeford *et al*., 2023). *et al* detail regarding these features are provided in **Section 4.7** and **Appendix** C-1.
Marine primary producers	
Coral	• Glomar Shoals (53 km east Export Trunkline Operational Area, 60 km east Offshore Facility Operational Area) • Rankin Bank (54 km south west of both the Offshore Facility Operational Area and the Export Trunkline Operational Area) • Montebello Islands State Marine Park (90 km south-west Export Trunkline Operational Area, 98 km south-west Offshore Facility Operational Area) • Lowendal Islands (109 km south-west Export Trunkline Operational Area, 129 km south-west Offshore Facility Operational Area) • Barrow Island State Nature Reserve (122 km south-west Export Trunkline Operational Area, 138 km south-west Offshore Facility Operational Area) • Muiron Islands (273 km south-west Export Trunkline Operational Area, 288 km south-west Offshore Facility Operational Area) • Ningaloo Coast World Heritage Area (WHA) (incl. Muiron Islands) (273 km south-west Export Trunkline Operational Area, 288 km south-west Offshore Facility Operational Area).
Seagrass beds and macroalgae	• Montebello Islands (90 km south-west Export Trunkline Operational Area, 98 km south-west Offshore Facility Operational Area) • Barrow Island (122 km south-west Export Trunkline Operational Area,138 km south-west Offshore Facility Operational Area) • Muiron Islands (273 km south-west Export Trunkline Operational Area, 288 km south-west Offshore Facility Operational Area)

Habitat / community	Key locations within the EMBA
	• Ningaloo Coast (273 km south-west Export Trunkline Operational Area, 288 km south-west Offshore Facility Operational Area) • Exmouth Gulf (300 km south-west Export Trunkline Operational Area, 311 km south-west Offshore Facility Operational Area)
Mangroves	• Montebello Islands (90 km south-west Export Trunkline Operational Area, 98 km south-west Offshore Facility Operational Area) • Ningaloo Coast (273 km south-west Export Trunkline Operational Area, 288 km south-west Offshore Facility Operational Area) • Exmouth Gulf (300 km south-west Export Trunkline Operational Area, 311 km south-west Offshore Facility Operational Area)
Other communities and habitats	
Plankton	Plankton within the PAA and EMBA are expected to be representative of the wider NWMR, as detailed in **Appendix C-1**. Primary productivity of the NWMR appears to be largely driven by offshore influences (as reported by Brewer *et al*., 2007), with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (e.g. bacteria), whereas, shelf waters are dominated by larger taxa such as diatoms (Hanson *et al*., 2007). Within the wider EMBA, peak primary productivity occurs in late summer/early autumn, along the shelf edge of the Ningaloo Reef. It also links to a larger biologically productive period in the area that includes mass coral spawning events, peaks in zooplankton and fish larvae abundance (Department of Conservation and Land Management, 2005) and periodic upwelling throughout the year.
Pelagic and demersal fish populations	Pelagic and demersal fish populations within the Operational Area and EMBA are expected to be representative of the NWMR (described in **Appendix C-1**). The presence of the NRC and subsea infrastructure represents artificial habitat that has likely resulted in the development of demersal fish communities that would otherwise not occur within the PAA (McLean *et al*. 2017). Given the continental shelf waters overlaps most of the PAA, pelagic species will also be present. The Ancient Coastline at 125 m Depth Contour KEF overlaps the Offshore Facility Operational Area, which mainly includes areas of unconsolidated soft sediment habitat interspersed by patches of hard substrate supporting low and sparse diversity (Wakeford *et al.,* 2023). Glomar Shoals KEF and Rankin Bank (approximately 54 km south-west of the Export Trunkline Operational Area and the Offshore Facility Operational Area) have also been identified as supporting high demersal fish richness and abundance (Wahab *et al*. 2018). The Continental Slope Demersal Fish Communities is a KEF near the PAA (approximately 67 km west at the closest point). Further information on the Ancient Coastline at 125 m Depth Contour, Rankin Bank, Glomar Shoals, and the Continental Slope Demersal Fish Communities is provided in **Section 4.7**.
Epifauna and infauna	Filter feeder epifauna such as sponges, ascidians, soft corals, and gorgonians are animals that feed by actively filtering suspended

Habitat / community	Key locations within the EMBA
	matter (DEWHA 2008). Filter feeders generally inhabit areas that have strong currents and hard substratum, often associated with deeper environments of the shoals and banks in the NWMR (Heyward *et al*., 2001a). Whereas, infauna such as polychaetes often occur in offshore habitats characterised by soft, unconsolidated sediments. Infauna communities are considered widespread and well represented along the continental shelf and upper slopes of the NWMR (Brewer *et al*., 2007a; Rainer, 1991; SKM, 2007b). A number of targeted surveys investigating epibenthos and infauna within offshore NWS shelf, slope environments, and seabed sediments have been carried out by Woodside (AIMS 2014b; AIMS 2014d; Heyward *et al*. 2001, SKM 2007a). A biodiversity survey of Glomar Shoals KEF and Rankin Bank was conducted in 2013 using underwater towed cameras. Widespread filter feeder habitat was observed throughout the survey area, generally at low to moderate densities. Filter feeding communities observed included bryozoans, sponges, gorgonians, and hydroids attached to consolidated substrate; these were interspersed with sand which hosted few filter feeders (AIMS 2014b). Infauna associated with soft unconsolidated sediment habitat in the area of the NWS Province is widespread and well represented along the continental shelf and upper slopes (Brewer *et al*. 2007, LeProvost Dames & Moore 2000, Rainer 1991, RPS 2012, SKM 2007a, Woodside Energy 2005). Surveys in the region indicate that deep water habitats consist primarily of bare unconsolidated carbonate sediments supporting a sparse assemblage of deposit and filter feeding organisms, including glass sponges, urchins, sea cucumbers, sea stars and crustaceans (Heyward *et al*. 2001, SKM 2007a, URS 2010). Filter feeder communities within the PAA are expected to be associated with areas of hard substrate, including on subsea infrastructure and the riser platform, and within areas of the Glomar Shoals and Ancient Coastline at the 125 m Depth Contour KEFs where there is hard substrate for attachment. Filter feeders within the EMBA are expected to be representative of the broader NWMR, with notable areas of high sponge diversity occurring in the Commonwealth waters of Ningaloo Marine Park and at shoals within the EMBA. The NWMR has been identified as a sponge diversity hotspot with a variety of areas of potentially high and unique sponge biodiversity, particularly in the Commonwealth waters of Ningaloo Marine Park (CALM, 2005b; Rees *et al*., 2004). Detail regarding these features is provided in **Appendix C-1**.

4.6 Protected Species

A total of 80 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 46 species were identified as potentially occurring within the PAA. The PMST report is produced from a grid-based search, which can cause species outside of the search area to be detected, such as terrestrial species. Species identified in the PMST that are not known to inhabit shorelines, nor rely on the marine environment for their diet, are not included assessed.

Species identified as potentially occurring within the PAA and EMBA as well as relevant Biologically Important Areas (BIAs) or Habitat Critical to their survival (Habitat Critical) are listed in **Table 4-5** to **Table 4-13**.

Figure 4-10 show the spatial overlap with relevant BIAs and Habitat Critical to their survival areas and the PAA and EMBA. Species that have been identified as having ecologically significant interactions in the PAA are described in further detail in **Section 6.** Key threatened and migratory species and associated behaviours in the EMBA are further described in **Appendix C-1.**

4.6.1 Fish, Sharks and Rays

A total of eight EPBC Act-listed Threatened and an additional seven migratory fish species have been identified to potentially occur within the EMBA. Of these, 14 occur in the PAA, (**Table 4-5**). There is one EPBC Act- listed Threatened species (dwarf sawfish) occurring within the Export Trunkline Operational Area that is not present within the Offshore Facility Operational Area. There are also 35 EPBC Act- listed marine species in the EMBA, which do not have a Threatened or Migratory status and include a variety of pipefish and sea dragons. A full list of EPBC Act listed species identified in the PMST search is provided in **Appendix C-2**. These species are described in the Master Existing Environment (Woodside, 2024).

The PAA overlaps the foraging BIA for the whale shark as outlined in (**Figure 4-4** and in **Table 4-6**). Further descriptions of BIAs are provided in **Appendix C-1**.

4.6.2 Marine Reptiles

A total of seven EPBC Act-listed Threatened marine reptiles have been identified to potentially occur within the EMBA. Five of these species are also listed migratory. Of these, six occur in the PAA (**Table 4-7**). There are two EPBC Act-listed Threatened species (short-nosed sea snake and leaf-scaled sea snake) occurring in the Export Trunkline Operational Area that are not present within the Offshore Facility Operational Area. Three terrestrial threatened species were identified by the PMST report for the EMBA (the Nevin's slider, Hamelin ctenotus and Pilbara olive python). However, these species are not considered to inhabit shorelines, or rely on the marine environment for their diet, and therefore are not included in **Table 4-7**. A full list of EPBC Act listed species identified in the PMST search is provided in **Appendix C-2**.

BIAs for the flatback turtle, green turtle, and hawksbill turtle overlap the Export Trunkline Operational Area only, as described in **Table 4-8** and shown in **Figure 4-5**. Further descriptions of BIAs are provided in **Appendix C-1**.

Habitat Critical to the survival of the flatback turtle, green turtle, hawksbill turtle, and loggerhead turtle is overlapped by or adjacent to the PAA as shown in **Figure 4-6** and described in **Table 4-9**.

An additional 16 EPBC Act-listed marine reptile species which do not have a threatened or migratory status are recorded to occur within the EMBA. The majority of these Marine-listed species are sea snakes and are described **Appendix C-1**).

4.6.3 Marine Mammals

A total of four EPBC Act-listed threatened and an additional nine migratory marine mammal species have been identified to potentially occur within the EMBA. Of these, 11 occur in the PAA (**Table 4-10**). There are three migratory marine mammal species that occur within the Export Trunkline Operational Area that are not present within the Offshore Facility Operational Area. Ten Threatened terrestrial mammal species were listed in the PMST report for the EMBA, but do not inhabit shorelines or rely on the marine environment for their diet, so are not included in **Table 4-10**. These included the northern quoll, golden bandicoot and rock wallaby, amongst other mammal species. A full list of EPBC Act listed species identified in the PMST search is provided in **Appendix C-2**.

BIAs that overlap the EMBA are presented in **Table 4-11**. The PAA overlaps with the pygmy blue whale distribution BIA (**Figure 4-7**) and the Export Trunkline Operational Area overlaps with

humpback whale migration BIA. **Figure 4-8** outlines the marine mammal species that have BIAs within the EMBA and further details are described in **Appendix C-1**. Biologically important areas overlapping the PAA and EMBA for the Southern right whale is shown in **Figure 4-9**.

4.6.4 Seabirds and Migratory Shorebirds

A total of 17 EPBC-listed Threatened and additional 23 Migratory seabird and shorebird species have been identified to potentially occur within the EMBA. Of these, 15 occur in the PAA (**Table 4-12**). There are 18 EPBC-listed seabirds and migratory shorebirds occurring in the Export Trunkline Operational Area that are not present within the Offshore Facility Operational Area (**Table 4-12**). An additional nine EPBC-listed Marine bird species are identified to occur within the EMBA, none of which are listed as Threatened or Migratory. A full list of EPBC Act listed species identified in the PMST search is provided in **Appendix C-2**.

BIAs that overlap the PAA and EMBA are presented in **Table 4-13** and **Figure 4-10**. The roseate tern and fairy tern breeding BIA overlaps with the Export Trunkline Operational Area, as shown in **Figure 4-10**. Detailed descriptions of seabirds and migratory shorebirds in the EMBA are provided in **Appendix C-1**.

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Carcharadon carcharias	White shark	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area	Species or species habitat known to occur within area
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	N/A	Species or species habitat known to occur within area	Species or species habitat known to occur within area
Pristis pristis	Freshwater sawfish	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Species or species habitat known to occur within area	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	Foraging, feeding or related behaviour known to occur within area
Carcharias taurus	Grey nurse shark	Vulnerable	N/A	Species or species habitat may occur within area	Species or species habitat likely to occur within area	Congregation or aggregation known to occur within area
Sphyrna lewini	Scalloped hammerhead	Conservation Dependant	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Thunnus maccoyii	Southern bluefin tuna	Conservation Dependant	N/A	Breeding known to occur within area	Breeding known to occur within area	Breeding known to occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Species or species habitat may occur within area	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	Species or species habitat likely to occur within area
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Isurus paucus	Longfin mako	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Manta alfredi	Reef manta ray	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	Species or species habitat known to occur within area
Manta birostris	Giant manta ray	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Lamna nasus	Porbeagle shark	N/A	Migratory	N/A	N/A	Species or species habitat may occur within area

Table 4-6: Fish, shark and ray biologically important areas within the PAA and the EMBA

Species	BIA Type	Approximate distance and direction of BIA from PAA (km)
Whale shark	Foraging (northward from Ningaloo along 200 m isobath)	Overlaps (Export Trunkline Operational Area and Offshore Facility Operational Area)
	Foraging (high density prey) (Ningaloo Marine park and adjacent Commonwealth Waters)	317 km south west (Export Trunkline Operational Area and Offshore Facility Operational Area)

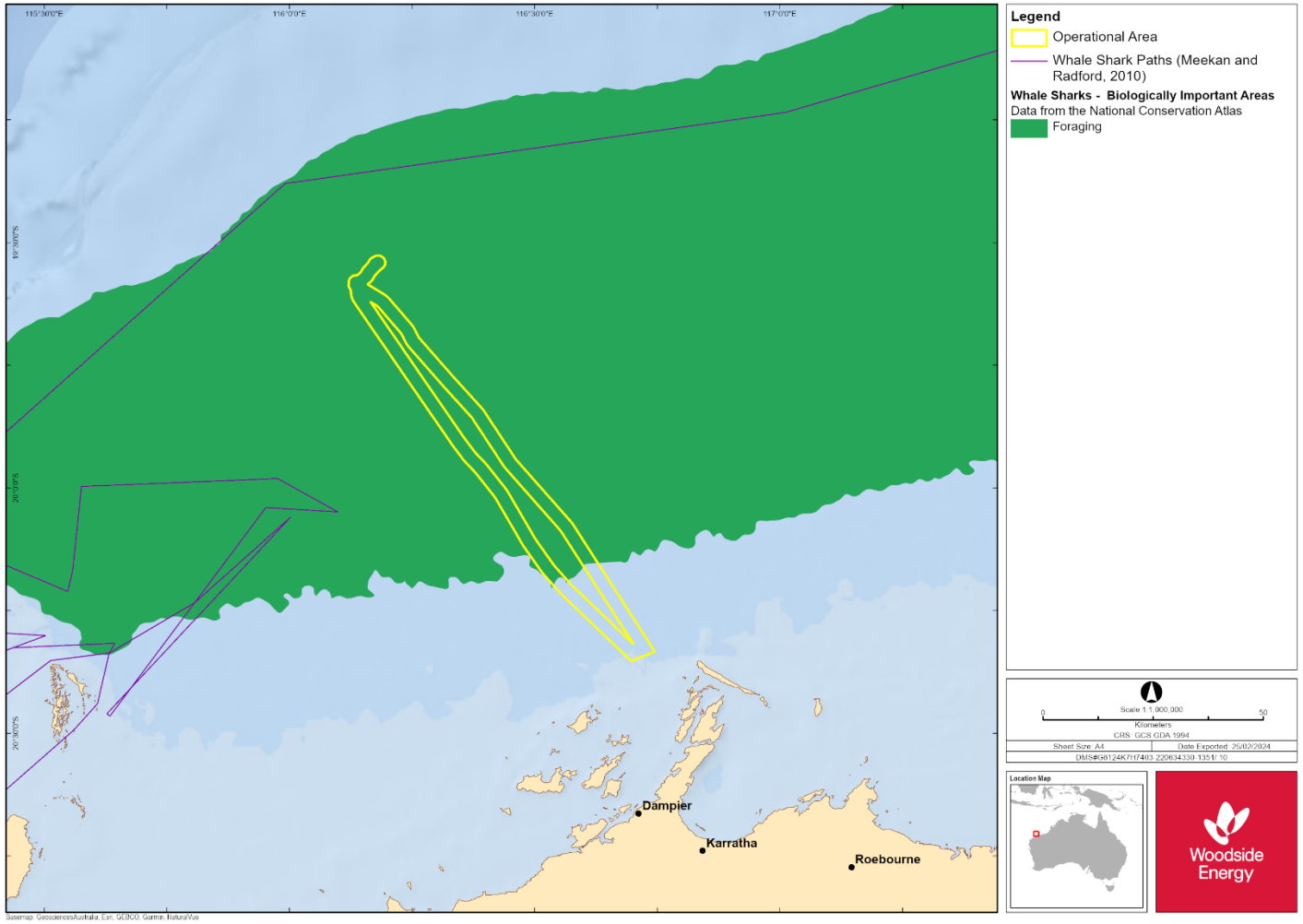


Figure 4-4: Whale shark biologically important areas overlapping the PAA and EMB

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

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

Table 4-8: Marine turtle biologically important areas within the PAA and EMBA

Species	BIA Type	Approximate distance and direction of BIA from PAA (km)
Flatback turtle	Internesting buffer (Dampier Archipelago (islands to the west of the Burrup Peninsula); Legendre Island, Huay Island; Intercourse Island; Delambre Island; West of Cape Lambert; Montebello Island, Hermite Island, NW Island, Trimouille Island; Cape Thouin/Mundabullangana/Cowrie Beach; Thevernard Island – South coast; Port Headland, Cemetery Beach, Pretty Pool, Paradise Beach; North Turtle Island; Eighty-mile Beach).	Overlaps (Export Trunkline Operational Area only)
	Mating (Dampier Archipelago (islands to the west of the Burrup Peninsula); Montebello Island, Hermite Island, NW Island, Trimouille Island; coral reef habitat west of the Montebello group (extends the entire length of Montebello's); Barrow Island).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Foraging (Dampier Archipelago (islands to the west of the Burrup Peninsula); Legendre Island, Huay Island; Montebello Island, Hermite Island, North-west Island, Trimouille Island; coral reef habitat west of the Montebello group (extends the entire length of Montebello's); string of islands between Cape Preston and Onslow, inshore of Barrow Island; Barrow Island).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Internesting (Dampier Archipelago (islands to the west of the Burrup Peninsula); coral reef habitat west of the Montebello group (extends the entire length of Montebello's).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Migration Corridor (Dampier Archipelago (islands to the west of the Burrup Peninsula)).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Aggregation (coral reef habitat west of the Montebello group (extends the entire length of Montebello's).	107 km south west (Export Trunkline Operational Area) 114 km south west (Offshore Facility Operational Area)
Green turtle	Internesting Buffer (Dampier Archipelago (islands to the west of the Burrup Peninsula); Legendre Island, Huay Island; Delambre Island; Montebello Islands, Hermite Island, NW Island, Trimouille Island; Middle Island, West Coast Barrow Island, West Coast and North Coast; North and South Muiruon Island; North-west Cape	Overlaps (Export Trunkline Operational Area only)

Species	BIA Type	Approximate distance and direction of BIA from PAA (km)
	Mating (Dampier Archipelago (islands to the west of the Burrup Peninsula); Montebello Islands, Hermite Island, NW Island, Trimouille Island; coral reef habitat west of the Montebello group (extends the entire length of Montebello's); Middle Island, West Coast Barrow Island, West Coast and North Coast)	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Nesting (Dampier Archipelago (islands to the west of the Burrup Peninsula); Legendre Island, Huay Island; Delambre Island; Montebello Islands, Hermite Island, NW Island, Trimouille Island; Middle Island, West Coast Barrow Island, West Coast and North Coast).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Foraging (Dampier Archipelago (islands to the west of the Burrup Peninsula); Legendre Island, Huay Island; Delambre Island; Dixon Island; Montebello Islands, Hermite Island, NW Island, Trimouille Island; coral reef habitat west of the Montebello group (extends the entire length of Montebello's); string of islands between Cape Preston and Onslow, inshore of Barrow Island; inshore tidal and shallow subtidal areas around Barrow Island; De Grey River area to Bedout Island; North Turtle Island).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Internesting (Dampier Archipelago (islands to the west of the Burrup Peninsula); Montebello Islands; coral reef habitat west of the Montebello group (extends the entire length of Montebello's); Barrow Island).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Basking (Middle Island, West Coast Barrow Island, West Coast and North Coast).	120 km south west (Export Trunkline Operational Area) 135 km south west (Offshore Facility Operational Area)
	Migration Corridor (Dampier Archipelago (islands to the west of the Burrup Peninsula)).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Aggregation (coral reef habitat west of the Montebello group (extends the entire length of Montebello's); between Middle and North Mangrove Island (also on west side of Cape Preston and Montgomery Reef in Kimberly)).	107 km south west (Export Trunkline Operational Area) 114 km south west (Offshore Facility Operational Area)

Species	BIA Type	Approximate distance and direction of BIA from PAA (km)
Hawksbill turtle	Internesting Buffer (Delambre Island (and other Dampier Archipelago Islands); Rosemary Island; Ah chong and South East Island; Montebello Island, Hermite Island, NW Island, Trimouille Island; Lowendal Island Group; Varanus Island; Barrow Island; Thevernard Island; Ningaloo coast and Jurabi coast)	Overlaps (Export Trunkline Operational Area only)
	Nesting (Delambre Island (and other Dampier Archipelago Islands; Montebello Island, Hermite Island, NW Island, Trimouille Island; Ah chong and South East Island; Lowendal Island Group; Barrow Island; Thevernard Island; Ningaloo coast and Jurabi coast).	7 km south (Export Trunkline Operational Area) 110 km south (Offshore Facility Operational Area)
	Mating (Dampier Archipelago (islands to the west of the Burrup Peninsula); Montebello Island, Hermite Island, NW Island, Trimouille Island; Lowendal Island; Barrow Island)	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Foraging (Dampier Archipelago (islands to the west of the Burrup Peninsula); Delambre Island; Dixon Island; Montebello Island, Hermite Island, NW Island, Trimouille Island; Lowendal Island Group; string of islands between Cape Preston and Onslow, inshore of Barrow Island; shallow water coral reef and artificial reef (pipeline) habitat); De Grey River area to Bedout Island)	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Internesting (Dampier Archipelago (islands to the west of the Burrup Peninsula); Lowendal Island Group))	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
	Migration Corridor (Dampier Archipelago (islands to the west of the Burrup Peninsula)).	10 km south (Export Trunkline Operational Area) 112 km south (Offshore Facility Operational Area)
Loggerhead turtle	Internesting buffer (Cohen Island; Rosemary Island; Montebello Islands, Lowendal Island; Muiron Island; Ningaloo coast and Jurabi coast)	Overlaps Export Trunkline Operational Area 89 km south-east (Offshore Facility Operational Area)
	Nesting (Chen Island; Rosemary Island; Montebello Islands, Lowendal Island; Muiron Island; Ningaloo coast and Jurabi coast)	8 km south-east (Trunkline Operational Area

Species	BIA Type	Approximate distance and direction of BIA from PAA (km)
		111 km south-east (Offshore Facility Operational Area)
	Foraging (De Grey River area to Bedout Island)	205 km east Export Trunkline Operational Area) 255 km east (Offshore Facility Operational Area)
Leatherback turtle	No BIAs within the PAA or EMBA.	

Table 4-9: Habitat critical to the survival of marine turtle species occurring within the EMBA

Species	Genetic stock	Nesting locations	Approximate distance and direction from PAA (km)	Inter-nesting buffer	Nesting period	Hatching period
Flatback turtle	Northwest Shelf	Dampier Archipelago (including Delambre Island and Huay Island), Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island, Cemetery Beach, Port Headland, Mundabullangana Beach, Eighty-mile Beach.	Overlaps (Export Trunkline Operational Area only)	60 km	All year (peak: Aug - Sep)	All year
Green turtle	Northwest Shelf	Dampier Archipelago, Barrow Island, Montebello Islands, Serrier Island and Thevenard Island, Exmouth Gulf and Ningaloo coast	Overlaps (Export Trunkline Operational Area only)	20 km	Nov–Mar (peak: Dec–Jan)	Jan–May (peak: Feb–Mar)
Hawksbill turtle	Northwest Shelf	Dampier Archipelago (including Delambre Island and Huay Island), Cape Preston to north of Exmouth Gulf (including Monteblo Islands and Lowendal Islands).	Overlaps (Export Trunkline Operational Area only)	20 km	All year (peak: Nov – May)	All year (peak: Nov – May)

Species	Genetic stock	Nesting locations	Approximate distance and direction from PAA (km)	Inter-nesting buffer	Nesting period	Hatching period
Loggerhead turtle	Northwest Shelf	Exmouth Gulf and Ningaloo coast	273 km south west (Export Trunkline Operational Area only) 293 km south west (Offshore Facility Operational Area	20 km	Nov-Mar (peak: Jan	Jan-May
Leatherback turtle	No nesting located within the PAA and EMBA					

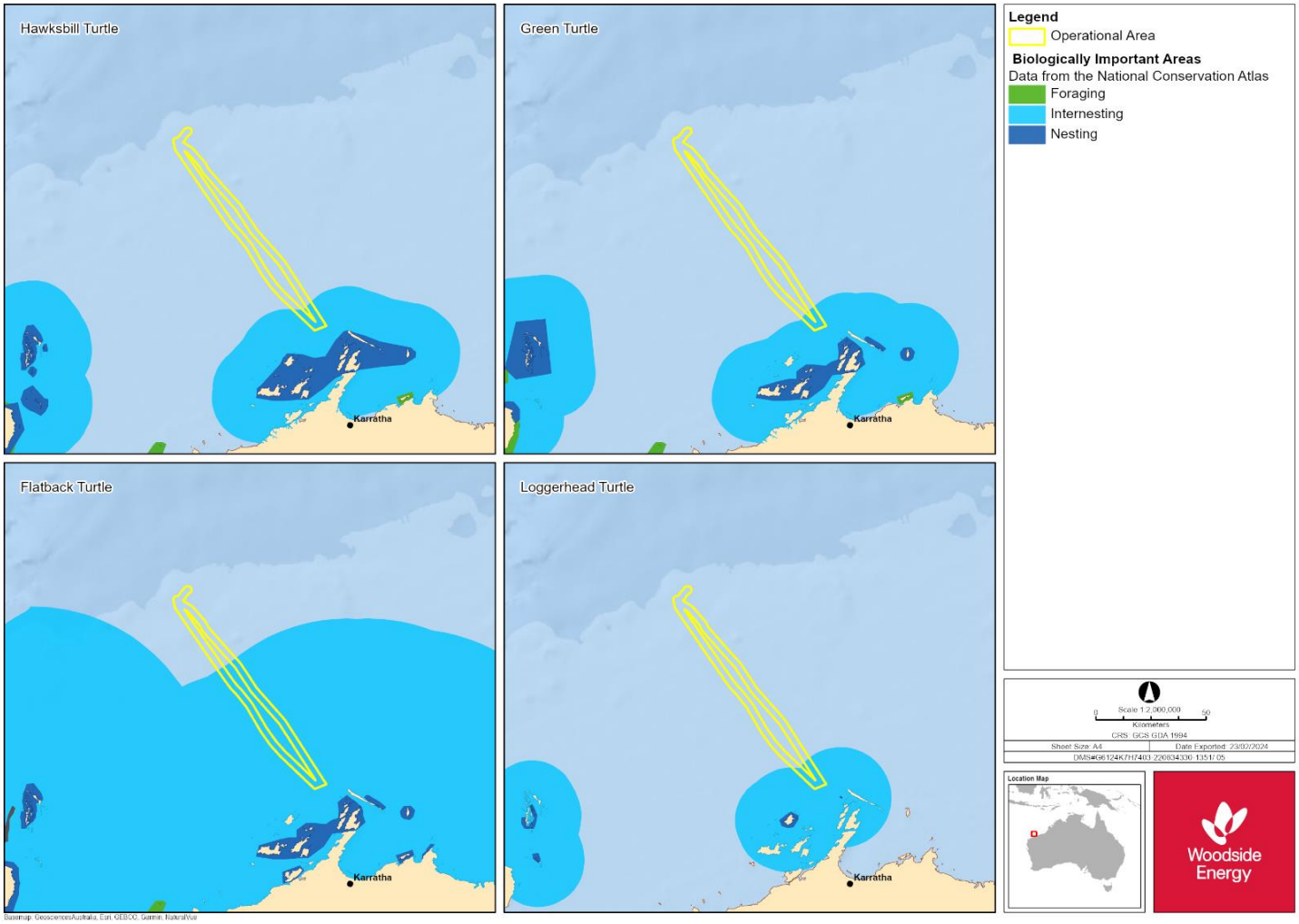


Figure 4-5: Marine reptile biologically important areas overlapping the PAA and EMBA

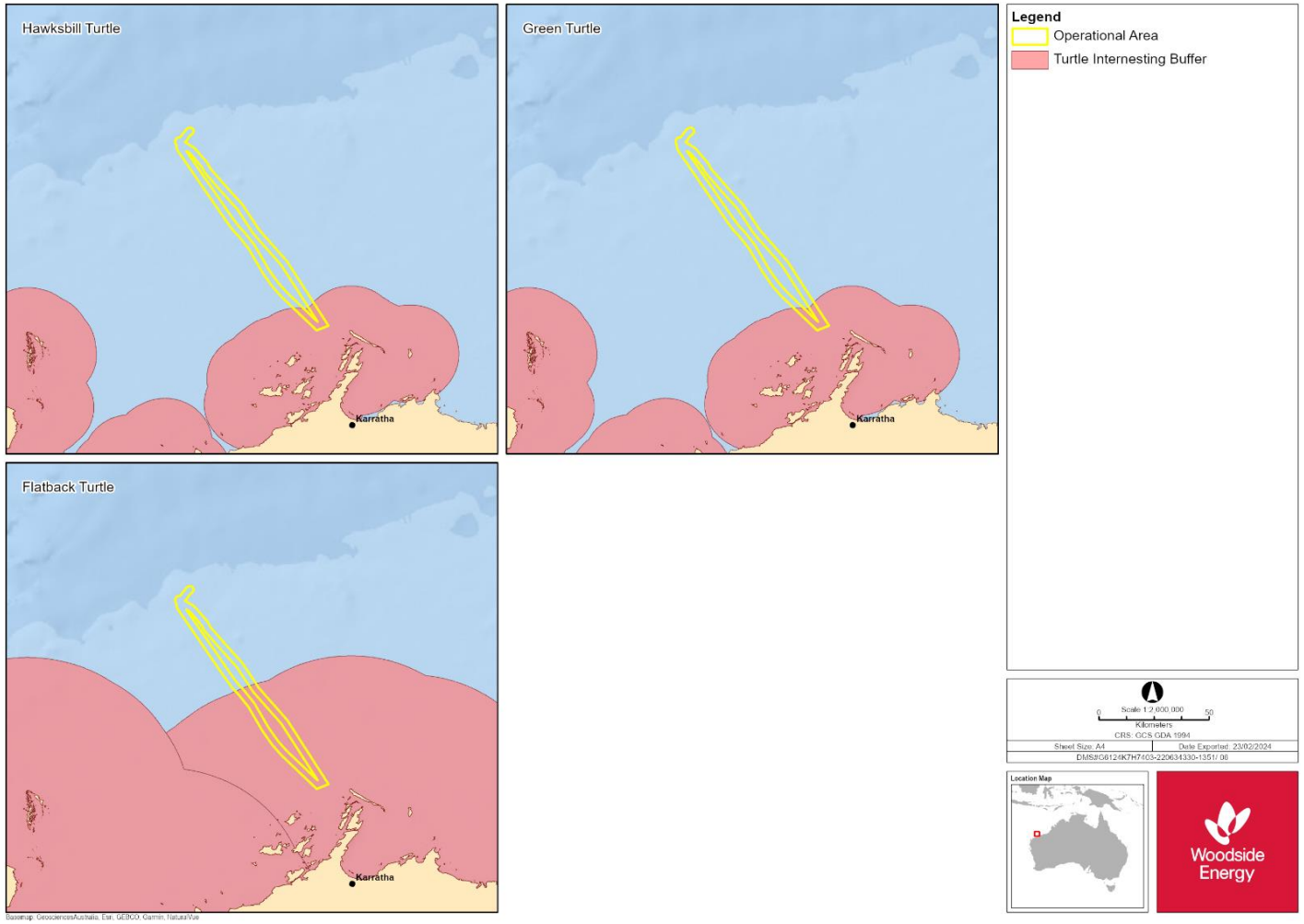


Figure 4-6: Habitat critical to the survival of marine turtles overlapping the EMBA.

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Balaenoptera musculus	Blue whale	Endangered	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Migration route known to occur within area
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Species or species habitat likely to occur within area	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	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Dugong dugon	Dugong	N/A	Migratory	N/A	Species or species habitat known to occur within area	Breeding known to occur within area
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Breeding known to occur within area	Breeding known to occur within area	Breeding known to occur within area
Orcaella heinsohni	Australian snubfin dolphin	N/A	Migratory	N/A	Species or species habitat likely to occur within area	Species or species habitat known 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	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Physeter macrocephalus	Sperm whale	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area	Species or species habitat may occur within area
Sousa chinensis	Australian humpback dolphin	N/A	Migratory	N/A	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Seapopulations)	Spotted bottlenose dolphin	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat known to occur within area	Species or species habitat known to occur within area
Eubalaena australis	Southern right whale	Endangered	Migratory	N/A	N/A	Species or species habitat likely to occur within area
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	N/A	N/A	Species or species habitat likely to occur within area

Table 4-11: Marine mammal biologically important areas within the PAA and EMBA

Species	BIA Type	Approximate distance and direction of BIA from PAA (km)
Dugong	Calving (Exmouth Gulf)	259 km south-west (Export Trunkline Operational Area) 285 km south west (Offshore Facility Operational Area)
	Breeding (Exmouth Gulf)	259 km south-west (Export Trunkline Operational Area) 285 km south west (Offshore Facility Operational Area)
	Foraging (high density) (Exmouth Gulf)	259 km south-west (Export Trunkline Operational Area)

Species	BIA Type	Approximate distance and direction of BIA from PAA (km)
		285 km south west (Offshore Facility Operational Area)
	Nursing (Exmouth Gulf)	259 km south-west (Export Trunkline Operational Area) 285 km south west (Offshore Facility Operational Area)
Pygmy blue whale	Distribution	Overlaps PAA
	Migration (Augusta to Derby). Tend to pass along the shelf edge at depths of 500 m to 1000 m; appear close to coast in the Exmouth-Montebello Islands area on southern migration)	43 km north (Export Trunkline Operational Area and Offshore Facility Operational Area)
	Foraging (Ningaloo)	327 km south west (Export Trunkline Operational Area) 336 km south west (Offshore Facility Operational Area)
Humpback whale	Migration (migration corridor extends from the coast to out to approximately 100 km offshore in the Kimberley region, extending south to North-west Cap to south of Shark Bay the migration corridor is reduced to approximately 50 km.)	Overlaps (Export Trunkline Operational Area only)
	Resting (Exmouth Gulf)	262 km south west (Export Trunkline Operational Area) 288km south west (Offshore Facility Operational Area)
Southern right whale	Reproduction BIA and Habitat critical to the survival (Ningaloo and Exmouth Gulf)	262 km south west (Export Trunkline Operational Area) 288km south west (Offshore Facility Operational Area)
	Migration (south of Ningaloo)	327 km south west (Export Trunkline Operational Area) 336 km south west (Offshore Facility Operational Area)

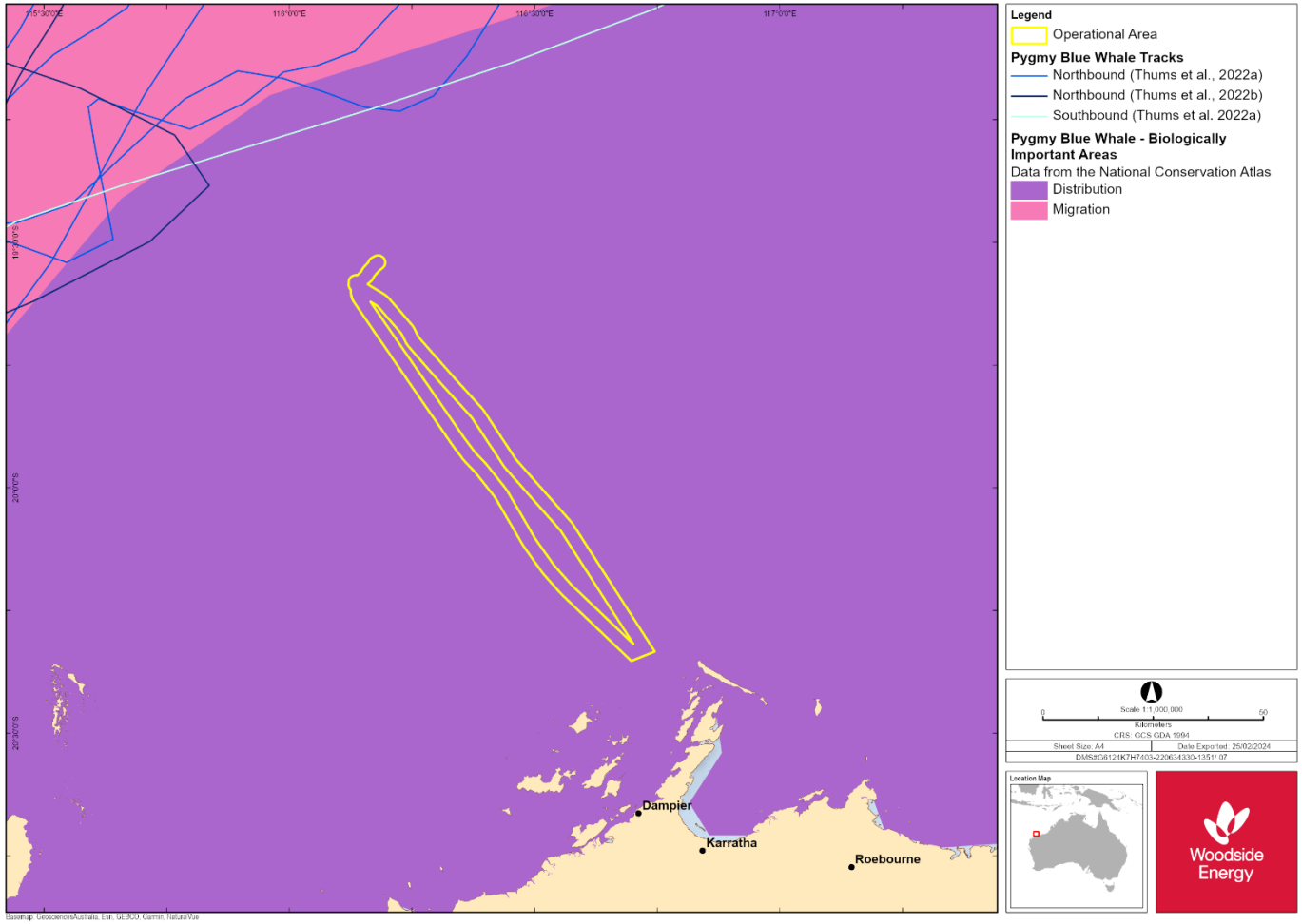


Figure 4-7: Pygmy blue whale biologically important areas overlapping the PAA and EMBA

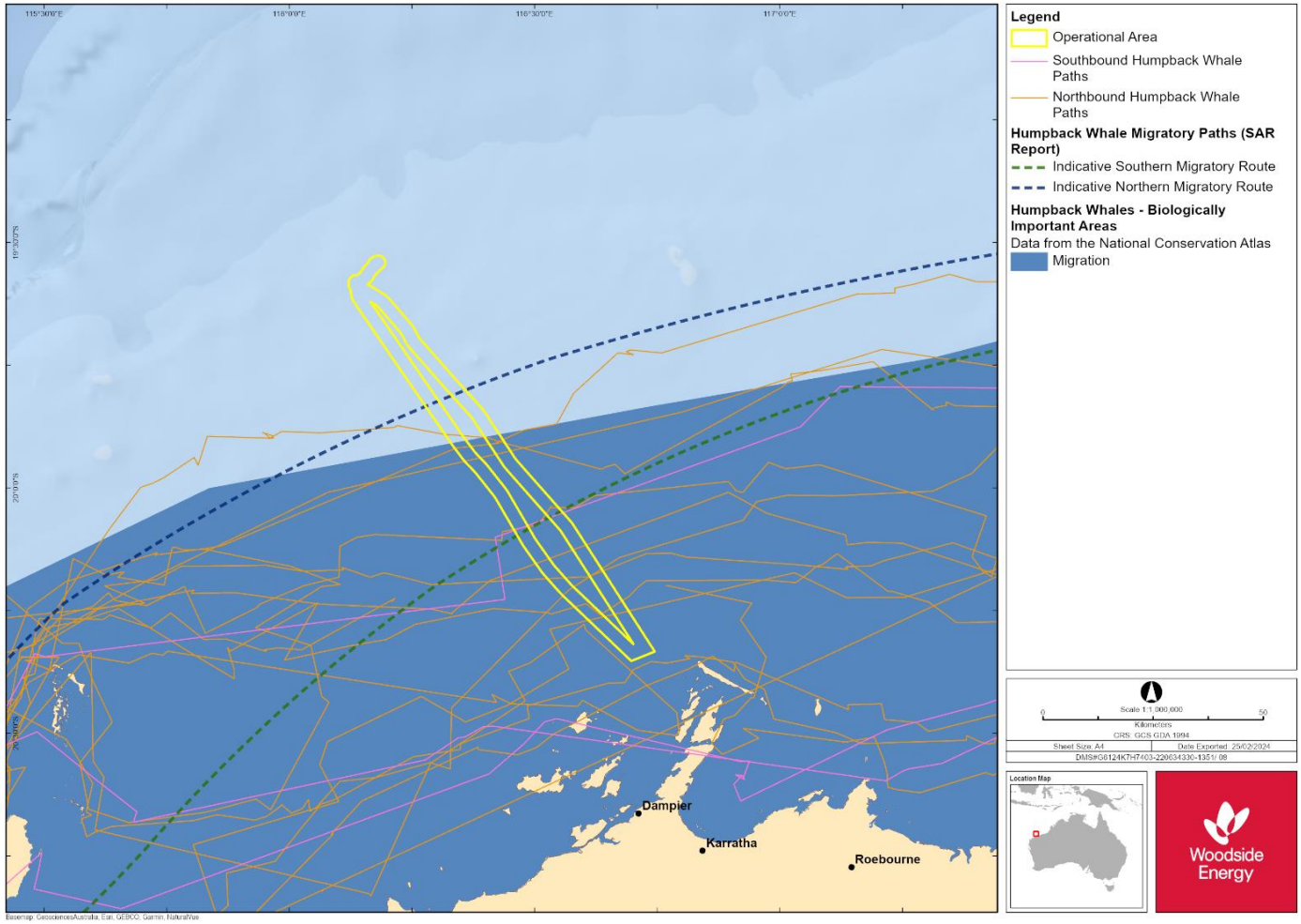


Figure 4-8: Humpback whale biologically important areas overlapping the PAA and EMBA

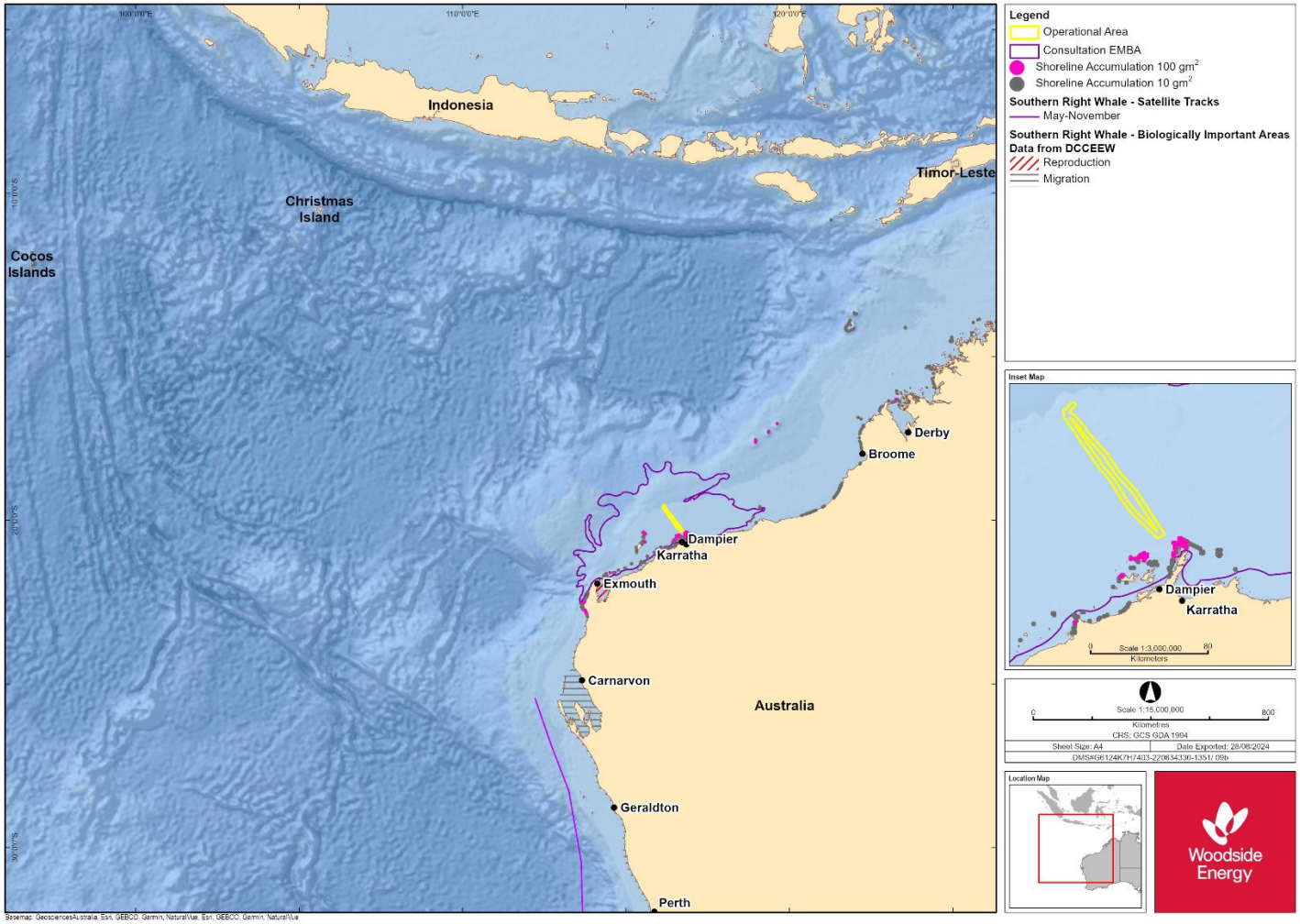


Figure 4-9: Southern right whale biologically important areas overlapping the PAA and EMBA

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	N/A	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Numenius madaga-scariensis	Eastern curlew	Critically Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat known to occur within area	Species or species habitat known to occur within area
Macronectes giganteus	Southern-giant petrel	Endangered	Migratory	N/A	Species or species habitat may occur within area	Species or species habitat may occur within area
Tringa nebularia	Common greenshank	Endangered	Migratory	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area	Species or species habitat known to occur within area
Calidris canutus	Red knot	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area	Species or species habitat known to occur within area
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	N/A	Species or species habitat known to 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	Species or species habitat known to occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Limosa lapponica menzbieri	Northern Siberian bar-tailed godwit,	Endangered	N/A	N/A	Species or species habitat known to occur within area	Species or species habitat known to occur within area
Phaethon lepturus fulvus	Christmas Island white-tailed tropicbird	Endangered	N/A	Species or species habitat may occur within area	Species or species habitat may occur within area	Species or species habitat may occur within area
Phaethon rubricauda	Red-tailed tropicbird	Endangered	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	Species or species habitat may occur within area	Breeding known to occur within area	Breeding known 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	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 may occur within area	Species or species habitat likely to occur within area
Apus pacificus	Fork-tailed Swift	N/A	Migratory	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	N/A	Breeding known to occur within area	Breeding 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	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
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	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 likely to occur within area	Breeding known to occur within area
Fregata minor	Great frigatebird	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area	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	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 or species habitat may occur within area
Hydroprogne caspia	Caspian tern	N/A	Migratory	N/A	Breeding known to occur within area	Breeding known to occur within area
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	N/A	Species or species habitat known to occur within area	Species or species habitat known to occur within area
Motacilla cinerea	Grey wagtail	N/A	Migratory	N/A	Species or species habitat may occur within area	Species or species habitat may occur within area
Motacilla flava	Yellow wagtail	N/A	Migratory	N/A	Species or species habitat may occur within area	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Pandion haliaetus	Osprey	N/A	Migratory	N/A	Breeding known to occur within area	Breeding known to occur within area
Phaethon lepturus	White-tailed tropic bird	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Sterna dougallii	Roseate tern	N/A	Migratory	N/A	Breeding likely to occur within area	Breeding known to occur within area
Sternula albifrons	Little tern	N/A	Migratory	N/A	Breeding known to occur within area	Breeding known to occur within area
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	N/A	N/A	Species or species habitat may occur within area
Thalassarche impavida	Campbell albatross	Vulnerable	Migratory	N/A	N/A	Species or species habitat may occur within area
Papasula abbotti	Abbott's booby	Endangered	N/A	N/A	N/A	Species or species habitat may occur within area
Rostratula australis	Australian painted snipe	Endangered	N/A	N/A	N/A	Species or species habitat likely to occur within area
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	N/A	N/A	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction		
				Petroleum Activities Area		EMBA
				Offshore Facility OA	Export Trunkline OA	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	N/A	N/A	Species or species habitat likely to occur within area
Onychoprion anaethetus	Bridled tern	N/A	Migratory	N/A	N/A	Breeding known to occur within area
Sula leucogaster	Brown booby	N/A	Migratory	N/A	N/A	Breeding known to occur within area
Thalasseus bergii	Greater crested tern	N/A	Migratory	N/A	N/A	Breeding known to occur within area

Table 4-13: Seabird and migratory shorebird biologically important areas within the PAA and EMBA

Species	BIA Type	Approximate distance and direction of BIA from *PAA* (km)
Wedge-tailed shearwater	Breeding (Kimberley, Pilbara, and Gascoyne coasts and islands, including Ashmore Reef).	Overlaps (Export Trunkline Operational Area only)
Roseate tern	Breeding (Kimberley, Pilbara, and Gascoyne coasts and islands, including Ashmore Reef).	Overlaps (Export Trunkline Operational Area only)
Fairy tern	Breeding (Pilbara and Gascoyne coasts and islands).	Overlaps (Export Trunkline Operational Area only)
Lesser crested tern	Breeding (Kimberley, Pilbara, and Gascoyne coasts and islands, including Ashmore Reef).	79 km south west (Export Trunkline Operational Area) 99 km south west (Offshore Facility Operational Area)
Lesser Frigatebird	Breeding (Kimberley and Pilbara casts and islands, including Ashmore reef)	154 km east (Export Trunkline Operational Area)

Species	BIA Type	Approximate distance and direction of BIA from *PAA* (km)
Brown Booby	Breeding (Kimberley and northern Pilbara coasts and islands, including Ashmore reef))	210km east (Export trunkline Operational Area)

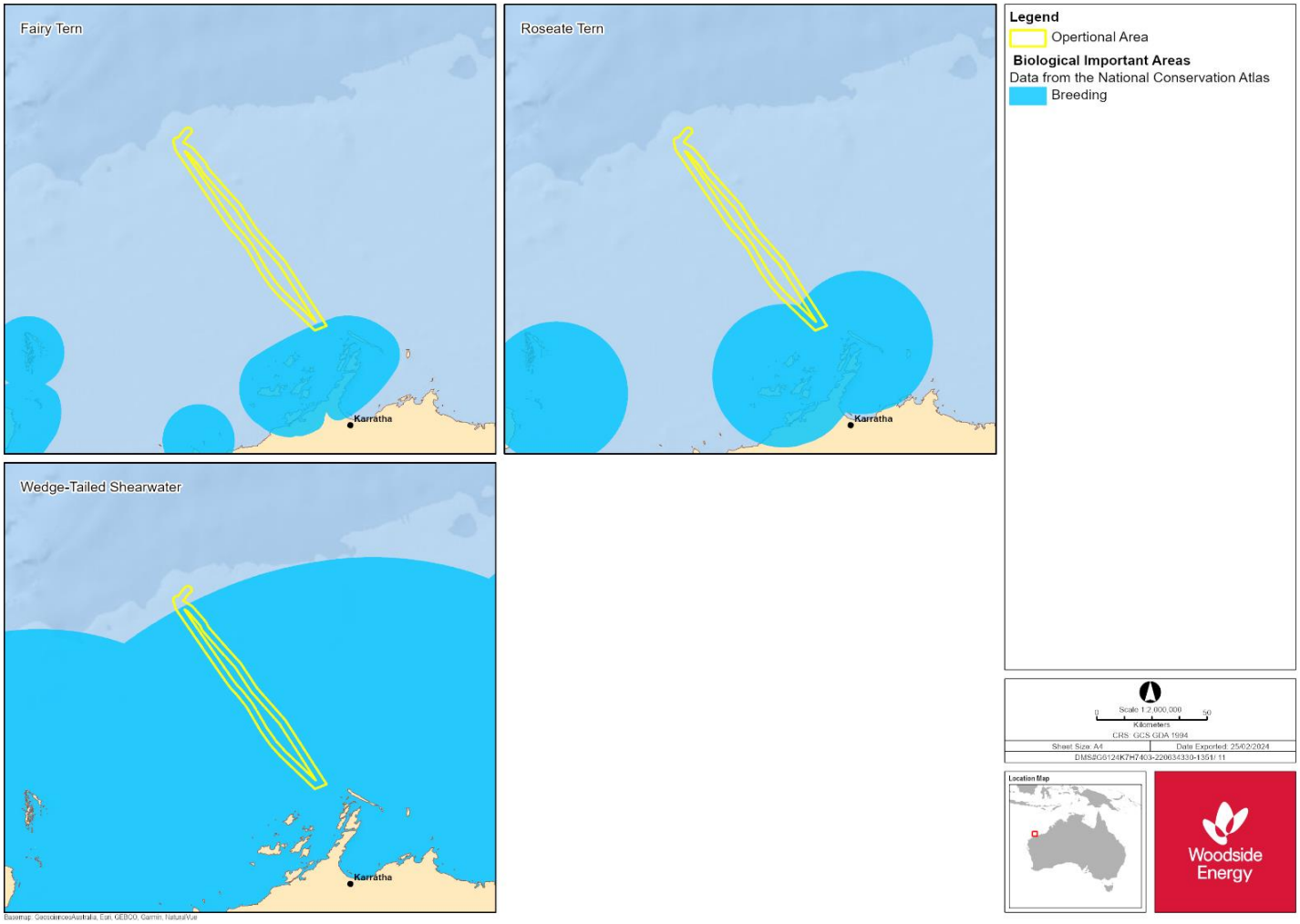


Figure 4-10: Seabird biologically important areas overlapping the PAA and EMBA

4.6.5 Seasonal Sensitivities for Protected Species

Seasonal sensitivities for protected migratory species identified as potentially occurring within the PAA are identified in **Table 4-15**. Seasonal sensitivities for species in the wider EMBA are described in **Appendix C-1**.

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

Species	January	February	March	April	May	June	July	August	September	October	November	December
Fish, sharks and rays												
Whale shark – Foraging northward from Ningaloo along the 200 m isobath[3]												
Whale shark – Foraging/Aggregation Ningaloo Marine park and adjacent Commonwealth Waters												
Marine reptiles[4]												
Flatback turtle – Pilbara Coast genetic stock Mating												
Flatback turtle – Pilbara Coast genetic stock Nesting												
Flatback turtle – Pilbara Coast genetic stock Hatching												
Green turtle – NWS genetic stock Nesting												
Green turtle – NWS genetic stock Mating												
Green turtle – NWS genetic stock Hatching												
Hawksbill turtle – Western Australia genetic stock Mating												
Hawksbill turtle – Western Australia genetic stock Nesting areas												
Hawksbill turtle - Western Australia genetic stock Hatching												

[3] TSSC, 2015d

[4] Commonwealth of Australia, 2017

Species	January	February	March	April	May	June	July	August	September	October	November	December
Loggerhead turtle - Western Australia genetic stock Nesting												
Loggerhead turtle - Western Australia genetic stock Hatching												
Marine Mammals												
Pygmy Blue whale – northern migration (Exmouth, Montebello, Scott Reef)[5]												
Pygmy Blue whale – southern migration (Exmouth, Montebello, Scott Reef) [6]												
Humpback whale – northern migration												
Humpback whale – southern migration												
Seabirds and migratory shorebirds[7]												
Wedge-tailed shearwater – Breeding												
Roseate tern - Breeding												
Fairy tern - Breeding[8]												

	Species may be present in the PAA
	Peak period. Presence of animals is reliable and predicable each year

[5] DSEWPaC, 2012a; McCauley and Duncan, 2011; McCauley and Jenner, 2010; Thums *et al*., 2022.

[6] DSEWPaC, 2012a; McCauley and Duncan, 2011; McCauley and Jenner, 2010; Thums *et al*., 2022.

[7] DAWE, 2020.

[8] Greenwell *et al*., 2020.

4.7 Key Ecological Features

KEFs within the PAA and EMBA are identified in **Table 4-16** and described in **Appendix C-1**. The Ancient Coastline at 125 m Depth Contour KEF overlaps the Offshore Facility Operational Area (**Figure 4-11**).

Table 4-15: Key ecological features within the PAA and EMBA

Key ecological feature	Distance and direction from the PAA to KEF (km)
Ancient Coastline at 125 m Depth Contour	Overlaps (Offshore Facility Operational Area)
Glomar Shoal	25 km east (Export Trunkline Operational Area) 40 km east (Offshore Facility Operational Area)
Continental Slope Demersal Fish Communities	67 km west (Export Trunkline Operational Area and Offshore Facility Operational Area)
Exmouth Plateau	178 km north west (Export Trunkline Operational Area and Offshore Facility Operational Area)
Canyons Linking the Cuvier Abyssal Plan and the Cape Range Peninsula	245 km south west (Export Trunkline Operational Area) 258 km south west (Offshore Facility Operational Area)
Commonwealth Waters Adjacent to Ningaloo Reef	292 km south west (Export Trunkline Operational Area) 304 km south west (Offshore Facility Operational Area)

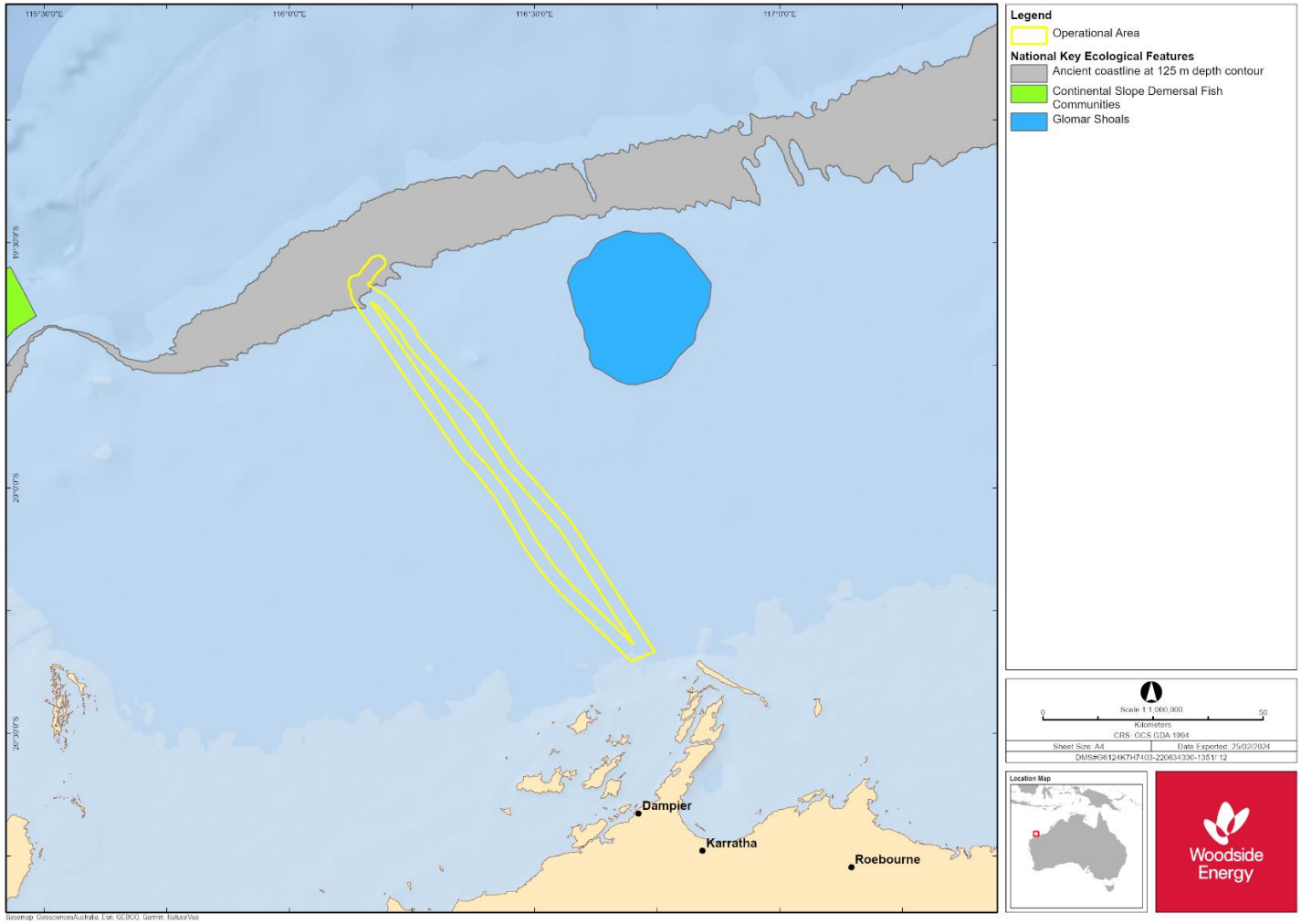


Figure 4-11: Key ecological features overlapping the PAA

4.8 Protected Places

No protected places overlap the PAA. Protected places within the EMBA are identified in **Table 4-16** and presented in **Figure 4-12**. **Appendix C-1** 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 PAA and EMBA.

Protected place or sensitive area	Distance and direction from PAA to protected place or sensitive area (km)	Park zone and IUCN category* overlapping PAA and/or EMBA
Australian Marine Parks		
Dampier	10 km south east (Export Trunkline Operational Area) 107 km south east (Offshore Facility Operational Area)	Habitat Protection Zone – IV National Park Zone – II Multiple Use Zone – VI
Montebello	40 km south west (Export Trunkline Operational Area) 55 km south west (Offshore Facility Operational Area)	Multiple Use Zone - VI
Gascoyne	276 km south west (Export Trunkline Operational Area and Offshore Facility Operational Area)	Multiple Use Zone – VI
Ningaloo	290 km south west (Export Trunkline Operational Area) 303 km south west (Offshore Facility Operational Area)	Recreational Use Zone – IV
Christmas Island	1130.0 km north-west	Habitat Protection Zone – IV National Park – II
Cocos (Keeling) Islands	1700.0 km north west	Habitat Protection Zone (IV) National Park – II
State Marine Parks and Nature Reserves		
Marine Parks		
Barrow Island	135 (Export Trunkline Operational Area) 150 km south west (Offshore Facility Operational Area)	Sanctuary Zone - IA
Montebello Islands	90 km south west (Export Trunkline Operational Area) 99 km south west (Offshore Facility Operational Area)	General Use Zone – II Special Purpose Zone (Benthic Protection) – IV Special Purpose Zone (Pearling) - VI
Ningaloo	290 km south west (Export Trunkline Operational Area) 305 km south west (Offshore Facility Operational Area)	General Use Zone – II Sanctuary Zone - IA
Conservation Parks		
Montebello Islands	96 km south west (Export Trunkline Operational Area)	N/A

Protected place or sensitive area	Distance and direction from PAA to protected place or sensitive area (km)	Park zone and IUCN category* overlapping PAA and/or EMBA
	106 km south west (Offshore Facility Operational Area)	
Nature Reserves		
Boodie, Double Middle Islands	123 km south west (Export Trunkline Operational Area) 142 km south west (Offshore Facility Operational Area)	IA
Barrow Island	121 km south west (Export Trunkline Operational Area) 138 km south west (Offshore Facility Operational Area)	IA
Lowendal Island	110 km south west (Export Trunkline Operational Area) 129 km south west (Offshore Facility Operational Area)	IA
Unnamed36915	8 km south (Export Trunkline Operational Area) 111 km south east (Offshore Facility Operational Area)	IA
Unnamed36913	35 km south east (Export Trunkline Operational Area) 33 km south east (Offshore Facility Operational Area)	IA
5(1)(h) Reserve		
Unnamed36910	18 km south (Export Trunkline Operational Area) 116 km south east (Offshore Facility Operational Area)	N/A
Unnamed36909	20 km south (Export Trunkline Operational Area) 118 km south east (Offshore Facility Operational Area)	N/A
Unnamed36907	25 km south (Export Trunkline Operational Area) 122 km south east (Offshore Facility Operational Area)	N/A
Unnamed41080	98 km south west (Export Trunkline Operational Area) 105 km south west (Offshore Facility Operational Area)	N/A
Unnamed40828	96 km south west (Export Trunkline Operational Area) 106 km south west (Offshore Facility Operational Area)	N/A
Unnamned44667	136 km south west (Export Trunkline Operational Area)	N/A

Protected place or sensitive area	Distance and direction from PAA to protected place or sensitive area (km)	Park zone and IUCN category* overlapping PAA and/or EMBA
	174 km south west (Offshore Facility Operational Area)	

** Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: National Park

III: Natural Monument or Feature

IV: Habitat / Species Management Area

V: Protected Landscape

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

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

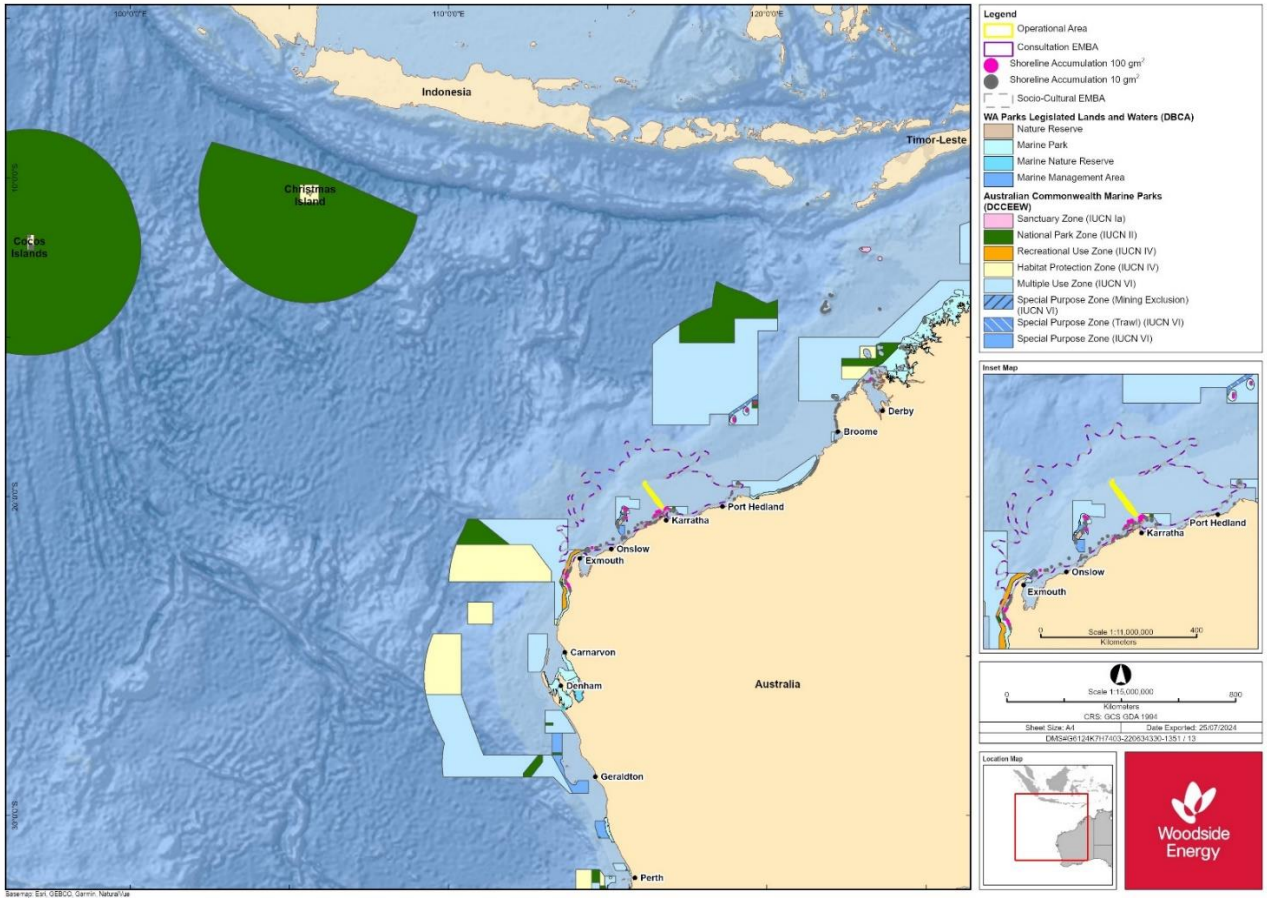


Figure 4-12: Protected areas adjacent to the PAA and EMBA

4.9 Cultural Values and Heritage

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

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

In this section, the heritage value of places within the PAA and EMBA and the cultural features of the PAA and EMBA are described. A description of cultural values and heritage as they relate to the wider North-west Marine Region (NWMR) is provided in **Appendix C-1.**

4.9.1 Native Title

There are 16 native title claims and 27 ILUAs that interact with the EMBA (**Table 4-17**). Claims and determinations have not been differentiated in this table, as it is acknowledged that rights and interest may exist within either of these. **Figure 4-13** shows the spatial overlap with native title claims and ILUAs.

As a starting point for understanding social and cultural features of the environment for Indigenous (First Nations) groups, Woodside uses the existing systems, such as native title, to identify Indigenous groups that may have functions, interests or activities that may be affected. To that end, Woodside identifies native title representative bodies and nominated representative entities (defined in **Section 5.3**), as well as native title claims, determinations and Indigenous Land Use Agreements (ILUAs) which the EMBA overlaps. While acknowledging that cultural features and heritage values may exist outside of the native title framework, Native title claims, determinations and ILUAs are defined under the *Native Title Act 1993* (Cth). Woodside considers this to be the broadest extent over which Indigenous groups have claimed native title rights and interests.

Further description of how Woodside considers native title rights and interest is provided in **Appendix C-1**.

4.9.2 Coastally Adjacent First Nations Groups

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

Further description of how Woodside engages with coastally adjacent first nations groups is provided in **Appendix C-1**.

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

Table 4-17: Summary of Native Title Claims, Determinations and Indigenous Land Use Agreements which overlap or are coastally adjacent to the environment that may be affected

Claim / determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Claim / Determination			
Jabirr Jabirr/Ngumbarl	Gogolanyngor Aboriginal Corporation	Yes	Yes
Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation Yinggarda Aboriginal Corporation	Yes	Yes
Malaya People	Mayala Inninalang Aboriginal Corporation	Yes	Yes
Nyangumarta-Karajarri Overlap Proceeding (Yawinya)	Nyangumarta Karajarri Aboriginal Corporation	Yes	Yes
Bardi and Jawi Native Title Determination	Bardi and Jawi Niimidiman Aboriginal Corporation	Yes	Yes
Ngarla and Ngarla #2 (Determination Area A)	Wanparta Aboriginal Corporation	Yes	Yes
Rubibi Community	Yawuru Native Title Holders Aboriginal Corporation	Yes	Yes
Kariyarra	Kariyarra Aboriginal Corporation	Yes	Yes
Nyangumarta People (Part A)	Nyangumarta Warrarn Aboriginal Corporation (Supported by YMAC)	Yes	Yes
Karajarri People (Area A)	Karajarri Traditional Lands Association (Aboriginal Corporation)	Yes	Yes
Dambimangari	Wanjina-Wunggurr (Native Title) Aboriginal Corporation	Yes	Yes
Karajarri People (Area B)	Karajarri Traditional Lands Association (Aboriginal Corporation)	Yes	Yes
Bindunbur	Nimanburr Aboriginal Corporation Nyul Nyul Aboriginal Corporation Gogolanyngor Aboriginal Corporation	Yes	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation	Yes	Yes
Uunguu Part A	Wanjina-Wunggurr (Native Title) Aboriginal Corporation	Yes	Yes
Ngarluma/Yindjibarndi	Yindjibarndi Aboriginal Corporation Ngarluma Aboriginal Corporation	Yes	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Kuruma Marthudunera (Part A)	Robe River Kuruma Aboriginal Corporation	No	Yes
Kuruma Marthudunera (Part B)	Robe River Kuruma Aboriginal Corporation	No	Yes

Claim / determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
ILUAs			
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	Wirrawandi Aboriginal Corporation Robe River Kuruma Aboriginal Corporation	Yes	Yes
RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement)	Ngarluma Aboriginal Corporation	Yes	Yes
Bardi Jawi Conservation Estate Indigenous Land Use Agreement	Bardi and Jawi Niimidiman Aboriginal Corporation	Yes	Yes
Nyangumarta Warrarn Aboriginal Corporation & Mandora Pastoral Lease ILUA	Nyangumarta Warrarn Aboriginal Corporation	Yes	Yes
Great Sandy Desert Project ILUA - Infrastructure	Karajarri Traditional Lands Association (Aboriginal Corporation)	Yes	Yes
Nyangumarta Karajarri and Anna Plains Station ILUA	Nyangumarta Karajarri Aboriginal Corporation	Yes	Yes
Ngarla Pastoral ILUA	Wanparta Aboriginal Corporation	Yes	Yes
FMG - Kariyarra Land Access ILUA	Yamatji Marlpa Aboriginal Corporation (on behalf of Kariyarra People)	Yes	Yes
KM & YM Indigenous Land Use Agreement 2018	Wirrawandi Aboriginal Corporation Robe River Kuruma Aboriginal Corporation	Yes	Yes
Cape Preston Project Deed (YM Mardie ILUA)	Wirrawandi Aboriginal Corporation	Yes	Yes
Nyangumarta Karajarri and Mandora Station ILUA	Nyangumarta Karajarri Aboriginal Corporation	Yes	Yes
Ningaloo Conservation Estate ILUA	Nganhurra Thanardi Garrbu Aboriginal Corporation	Yes	Yes
NKAC KSCS Eighty Mile Beach ILUA	Nyangumarta Karajarri Aboriginal Corporation	Yes	Yes
Mayala Country Marine Park Indigenous Land Use Agreement	Mayala Inninalang Aboriginal Corporation (Kimberly Land Council)	Yes	Yes
Anketell Port, Infrastructure Corridor and Industrial Estates Agreement	Ngarluma Aboriginal Corporation	Yes	Yes
Yawuru Nagulagun / Roebuck Bay Marine Park ILUA	Yawuru Native Title Holders Aboriginal Corporation	Yes	Yes
Yawuru Prescribed Body Corporate ILUA - Broome	Yawuru Native Title Holders Aboriginal Corporation	Yes	Yes
Nyangumarta PBC KSCS ILUA	Nyangumarta Warrarn Aboriginal Corporation	Yes	Yes

Claim / determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Alinta-Kariyarra Electricity Infrastructure ILUA	Yamatji Marlpa Aboriginal Corporation (on behalf of Kariyarra People)	Yes	Yes
Nyangumarta Warrarn Aboriginal Corporation & Wallal Downs Pastoral Lease ILUA	Nyangumarta Warrarn Aboriginal Corporation	Yes	Yes
Karajarri Traditional Lands Association KSCS Eighty Mile Beach ILUA	Karajarri Traditional Lands Association (Aboriginal Corporation)	Yes	Yes
Dambimangari KSCS Marine Parks ILUA	Dambimangari Aboriginal Corporation	Yes	Yes
RTIO Kuruma Marthudunera People ILUA	Robe River Kuruma Aboriginal Corporation	No	Yes
Macedon ILUA	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Ngarla PBC KSCS ILUA	Wanparta Aboriginal Corporation	No	Yes
Kariyarra and State ILUA	Kariyarra Aboriginal Corporation	No	Yes
Cape Preston West Export Facility	Wirrawandi Aboriginal Corporation	No	Yes

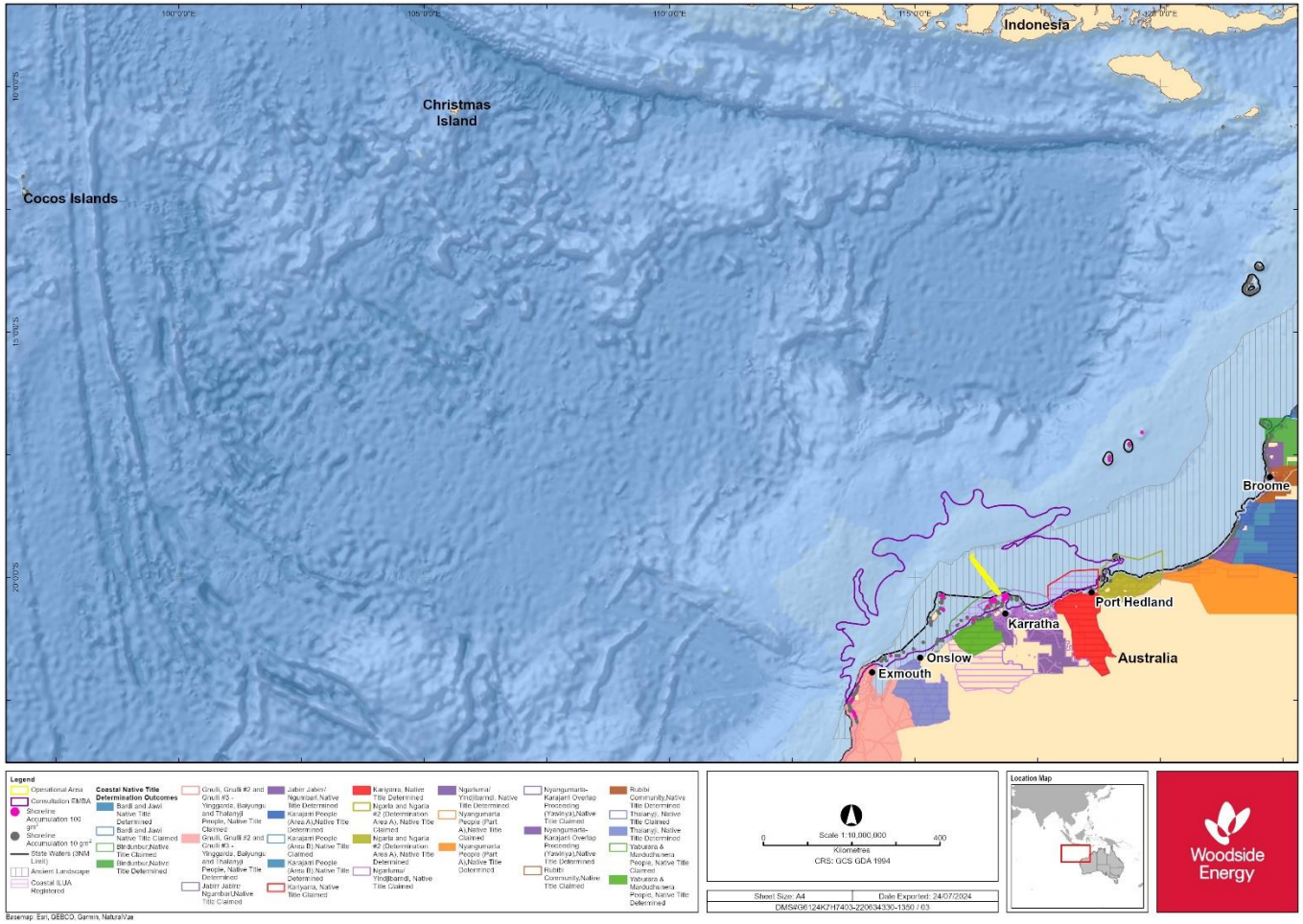


Figure 4-13: PAA and socio-cultural EMBA in relation to Native Title Claims, Determinations and Indigenous Land Use Agreements

4.9.3 Marine Parks

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

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

The PAA does not overlap any Commonwealth Marine Parks. The EMBA overlaps with features of the Eighty Mile Beach, Gascoyne, Montebello and Ningaloo AMPs managed under the North-west Marine Parks Network Management Plan 2018 (Director of National Parks, 2018). The EMBA overlaps a further nine State Marine Parks. Where these plans specify identifiable representative bodies who may hold knowledge of heritage values or cultural features – including but not limited to Registered Native Title Bodies Corporate – these bodies are consulted (**Section 5.3**). Consultation with these groups may identify heritage values and cultural features beyond those addressed in the marine park management plans. Identifiable representative bodies for the marine parks overlapped by the EMBA are specified in **Table 4-18**.

Management plans for the AMPs note shipwrecks within the AMPs and overlap with World, National and Commonwealth heritage lists. These are addressed in **Section 4.9.7** below.

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

A number of management plans for the state marine parks also note First Nations and maritime heritage within the marine parks. These are addressed in **Sections 4.9.4.2.1**.

Table 4-18: Summary of Commonwealth and State Marine Park Management Plan environment that may be affected overlap

Marine Park Management Plan	PAA Overlap	EMBA Overlap	Specified Bodies
Commonwealth Marine Park Management Plan			
Mermaid Reef National Park Zone	No	Yes	No identifiable body specified
Cocos (Keeling) Islands Habitat Protection Zone	No	Yes	No identifiable body specified
Gascoyne AMP	No	Yes	Yamatji Marlpa Aboriginal Corporation
Dampier AMP	No	Yes	The Ngarluma Aboriginal Corporation Yindjibarndi Aboriginal Corporation
Eighty Mile Beach AMP	No	Yes	The Karajarri Aboriginal Corporation,

Marine Park Management Plan	PAA Overlap	EMBA Overlap	Specified Bodies
			Nyangumarta Karajarri Aboriginal Corporation Nyangumarta Warrarn Aboriginal Corporation Wanparta Aboriginal Corporation The Kimberly Land Council Yamatji Marlpa Aboriginal Corporation
Montebello AMP	No	Yes	Yamatji Marlpa Aboriginal Corporation
Ningaloo AMP	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation Yamatji Marlpa Aboriginal Corporation
State Marine Park Management Plan			
Barrow Island Marine Management Area	No	Yes	No identifiable body specified
Muiron Islands Marine Management Area	No	Yes	No identifiable body specified.
Montebello Islands MP	No	Yes	No identifiable body specified.
Rowley Shoals MP	No	Yes	No identifiable body specified.
Barrow Island MP	No	Yes	No identifiable body specified.
Eighty Mile Beach MP	No	Yes	Nyangumarta Warrarn Aboriginal Corporation, Wanaparta Aboriginal Corporation or Nyangumarta Karajarri Aboriginal Corporation Karajarri Traditional Land Association
Ningaloo MP	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation
Lalang-gaddam MP	No	Yes	Dambimangari Aboriginal Corporation
North Kimberley MP	No	Yes	Wunambal Gaambera Aboriginal Corporation
National Park Management Plan			
Murujuga National Park	No	Yes	Murujuga Aboriginal Corporation
Cape Range National Park	No	Yes	Yamatji Marlpa Aboriginal Corporation

4.9.4 Sea Country Values

Sea country values of marine ecosystems are further described in **Appendix C-1**. An impact to marine ecosystems has the potential to impact cultural values where the impact is detectable within Sea Country. Potential impacts to these cultural values are assessed in **Section 6**.

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

Cultural features or heritage values related to marine species within the PAA or EMBA raised by Traditional Custodians in the course of preparing the EP. Values identified in publicly available literature are summarised in **Section 6-10**.

4.9.4.1 Desktop Assessment of Sea Country Values

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

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

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
Gnulli **(Baiyungu, Thalanyji, Yinggarda)**	Feature: resources including marine animals. Value: traditional knowledge holds that ancestors live on the land and in the water. Therefore, Indigenous people have obligations to access and care for these places (e.g., keeping them clean).	Peck on behalf of the Gnulli Native Title Claim Group v State of Western Australia (2019)	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Feature: heritage sites in the Ningaloo region include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources. Feature: resources including gajalbu (emu), bundgurdi (kangaroo), bardurra (bush turkey), majun (marine turtles), turtle eggs, bilygurumarda (osprey), fish, shellfish and plants. Feature: mudflats, mangroves and sand dunes provide a critical breeding ground for marine and terrestrial wildlife. Value: the Ningaloo region contains cultural heritage dating back at least 32,000 years, including ceremonial thalu sites. Value: connection to Country is important to the Traditional Owners' spirituality and religion. Value: caring for Country - "The southern coastal reserves along the Ningaloo Coast are jointly managed by Traditional Owners and the DBCA. The Joint Management Body ensures that the Traditional Owners have an opportunity to make decisions about environmental management and land use". This document also includes information that is marked that cannot be copied, reproduced or used without consent.	DBCA (2020)	No Possible (turtles, fish) No (other resources) No No Possible (unspecified) No	Possible (Shoreline accumulation areas) Possible (turtles, turtle eggs, fish, shellfish) No (other resources) Possible (mangroves) Possible (unspecified, but likely refers to onshore areas outside the EMBA) Possible (unspecified, but likely due to location of EMBA) Yes
	Feature: resources including mangrove crabs, gastropods, shellfish, dugong, turtle.	Morse (1993).	Possible (all but mangrove crabs)	Possible (all)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
Kariyarra	Value: traditional knowledge recalls that a salt water serpent lives in the sea and brings fish to shore.	Zaunmayr (2016)	Possible (unspecified)	Possible (unspecified)
Thalanyji	Feature: (1) resources including fish, shellfish, crabs, crustaceans, sea urchins, turtle, dugong and flora and fauna associated with mangrove communities. Feature: (2) archaeological sites on Barrow Island. Value: (3) connection to Country.	Commonwealth of Australia (2002)	(1) Possible (fish, turtle, dugong, invertebrates) (2) No (3) Possible (unspecified)	(1) Possible (fish, turtle, dugong, invertebrates) (2) Possible (based on shoreline accumulation) (3) Possible (unspecified)
	Feature: resources include turtles, eggs, fish, shellfish and plants.	DBCA *et al*. (2002)	Possible (fish, turtle)	Possible (fish, turtle, eggs, shellfish)
	Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA (2022)	Possible all (unspecified)	Possible all (unspecified)
	Value: access to Barrow and possibly Montebello Islands	Hook *et al*. (2004)	No	Possible
	Feature: artefact scatters are located in coastal sand dunes. Feature: burials are located in coastal sand dunes.	Hook (2020)	No No	Possible (shoreline accumulation areas) Possible (shoreline accumulation areas)
	Feature: archaeological sites are located on Barrow Island.	Ditchfield *et al*. (2018) Paterson (2017)	No	Possible (Shoreline accumulation areas)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Feature: archaeological sites are located at Barrow and Montebello Islands. Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.	Dortch *et al*. (2019).	No No	Possible (Shoreline accumulation areas—Barrow Island) Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation)
	Feature: thalu ceremonial sites for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu. Feature: ceremonies. Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA 2022	No No Possible Possible Possible	No (ceremonial use) Possible (submerged thalu sites e.g., petroglyphs) No Possible Possible Possible
Bardi and Jawi	Feature: Mythologically important places Value: Activities of mythological beings in the sea area	Sampi on behalf of the Bardi and Jawi People v State of Western Australia (2010)	Possible (unspecified)	Possible (unspecified)
			Possible	Possible
	Feature: Resources including (1) dugong, (2) turtle and (3) trochus shell		Possible (all)	Possible (all)
	Value: Traditional knowledge of the sea and the features within		Possible (unspecified)	Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Value: Access to the sea around the coast of the mainland of the Dampier Peninsula and among the islands for traveling, hunting and fishing		No	No (Shoreline accumulation only)
	Feature: Pearl shell	Sampi v Western Australia (2005)	Possible	Possible
	Value: Fishing		Possible	Possible
	Feature: Feather		Possible	Possible
	Value: Reefs		No	Possible
	Value: Resource collection at One Arm Point (reef)	Oades and Meister (2013)	No	No
	Value: resources including: • Banyjarr, (clam and abalone) (1) • Noomool (seagrass) (2) • Alngir (trochus), Goowarn (pearl shell) (3) • Bluebone (Goorlan) (4) • Aarli (fish) and fish stocks (5) • Goorlil (turtle) (6) • Odorr (dugong) (7) • Joord (mullet) (8) • Barnamb (stingray) (9) • Ngarrangg (mud crab) (10)		(1, 3 - 9) Possible (2, 10) No	Possible (all)
	Feature: Seagrass meadows		No	Possible
	Feature: Mangroves		No	Possible

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Value: Access to Sea Country		Possible (unspecified)	Possible (unspecified)
	Value: Sustainable fishing of (1) fish, (2) turtle and (3) dugong [resource availability]		Possible (all)	Possible (all)
	Feature: Saltwater including coral reefs communities (1), sea grass (2), saltmarsh communities (3), mangroves and macroalgae (4)		No	Possible (all)
	Feature: Whales (1), dolphins (2), estuarine crocodiles (3), sea and shore birds (4).		(1,2, 4) Possible (3) No	(1,2, 4) Possible (3) No
	Value(s): • Marrgoorr (coral) (1) and marnany (reef) communities (2) • Mangroves (3), creeks (4) and saltmarsh communities (5) • Noomool (seagrass) (6) and laanyji (macroalgae) communities(7) • Water and sediment quality (8) • Geomorphology including beaches (9) • Subtidal filter-feeding communities (10) • Intertidal sand and mud flat communities and oombans (freshwater soaks) (11) • Goorlil (marine turtles) (12) • Aarli (fish) (13) including joorroo (sharks) (14) and barnamb (rays) (15) • Odorr (dugongs) (16) • Miinimbi (whales) and bayalbarr (dolphins) (17) • Linygurra (estuarine crocodiles) (18) • Sea and shore garrabal (birds) (19) • Invertebrates (20)	DBCA (2022)	(1-6, 9-12,18) No (8) Yes Possible (all other values)	(18) No (8) Yes Possible (all other values)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Value: Shark Dreamtime associated with saltwater including how the hammerhead came into existence.		Possible (unspecified location)	Possible (unspecified location)
	Value: Access to Sea Country areas specified below: • Woolardgoon Special Purpose Zone • Packer Island • Bool Special Purpose Zone • Thomas Bay • Jilany Creek Special Purpose Zone • Arnbarnani Special Purpose Zone • Cape Leveque Island • Oorroondoorroon Special Purpose Zone • Alarm Shoal • Birimbir Special Purpose Zone • Hunter Creek • Iinalang Special Purpose Zone • Sunday Island Group • Nooblooloon Special Purpose Zone • Catamaran Bay • Garrambany Special Purpose Zone • Chunelarr Creek • Maljin Special Purpose Zone • Cygnet Bay • Garramal Special Purpose Zone • Cunningham Point		No(all)	No (all)
	Value: Dreaming stories and songlines associated with ancestral beings that travelled Sea Country	Smyth and Bahrdt (2007)	Possible (unspecified)	Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Feature: Islands (1), reefs (2), sandbanks (3) and marine species (4)		(1-3) No (4) Possible	Possible (all)
	Value/s: • shark ancestral being (Looloolоo) (1) • spirit beings (rai) (2) • double log raft (gaalwa) (3) • pearl shell (goowarn) (4) • middens (5) • fish traps (6) • reefs (marnany) (7) • turtles (goorlil) (8) • dugongs (odorr) (9)		(1, 2) Possible (unspecified) (3, 5 -7) No (4, 8, 9) Possible	(1, 2) Possible (unspecified) (3) No (4 - 9) Possible
	Value/s: • rock cod (jimbiridj) (1) • baler shell (ngarlanggarnanya) (2) • blue crab (gandjeelaadj) (3) • flat head fish (beelbaba) (4) • creator snake (unggudia) (5) • dugong (waliny) (6) • turtle (julawaddaa (7) • estuarine crocodile (goiyoiya) (8) • whale (ngunuubange) (9) • dolphin (jigeedany) (10) • sea birds (11) • barramundi (Ilerdda) (12) • fish (jaiya) (13) • crabs (ganbaneddee) (14)		(5) Possible (unspecified) (1- 4,7, 9 - 16, 20) Possible (8, 18, 19) No	(5) Possible (unspecified) (1- 4,6, 7, 9 – 17, 19, 20) Possible (8) No (18) Possible (Shoreline accumulation only)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	• oysters (marlinju) (15) • green turtle (waarlee) (16) • coral reefs (waddaroo) (17) • beaches (galaab) (18) • mangrove (jindirm) (19) • seagrass beds (julum) (20)			
Jabirr Jabirr and Ngumbarl	Value: coastal areas used for hunting, fishing and camping	Rita Augustine & Ors v State of Western Australia (Jabirr Jabirr). (2013)	No	Possible (Shoreline accumulation only)
	Features: Lurujarri Dreaming Trail • Ngu nungurrukun (Coconut Well) • Judinnang (the ocean reef) and the Lurujarri (coastal dunes) • Gudurlwarany (Brolga) • Lindalinda (Jabiru) • Galbany (mullet) and Walgawalga (salmon) • Wader birds • Wirrkinymirri (Willie Creek) • Saltwater crocodiles. Linygoorr will usually feed on Wangkaja (mangrove crab) and fish • Biyalbiyal (mangrove) trunks	WA - Future act determination summary - WO07/803.	No (all)	No (all values in specific locations only)
	Value(s): Resources including: • Turtle (1) • Dugong (2) • Stone at Yalun or Cone Bay (3) • Gulngarriny or yams and madilang tubers at Long, Mermaid, Pascoe and other islands (4)	Goolarabooloo n.d	(1, 2, 5, 6) Possible (3, 4, 7) No	(1, 2, 5, 6) Possible (3, 4, 7) No

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	• Trochus, clams, oysters (5) • Fish (6) • Sugarbag (native honey) (7)			
Mayala	Feature: spiritual beings that live on the islands	Mayala #2 (2018)	No (location specific)	No (location specific)
	Value: right to access, utilise and speak for buru or dambi (sea/land estates)		Possible	Possible
	Value: caring for Country - duty to protect their country,		Possible (unspecified)	Possible (unspecified)
	Value: access to Country through numurr or 'saltwater highways'		Possible (unspecified)	Possible (unspecified)
	Value: Shells		Possible	Possible
	Value: access to/travel between islands • "the deep sea" amongst the islands (1) • Brue Reef as a source of trochus, fish and turtle (2)		(1) Possible (unspecified) (2) No	(1) Possible (unspecified) (2) No
	Value: Continuation of traditional Law		Possible (unspecified)	Possible (unspecified)
	Value: Caring for Country		Possible (unspecified)	Possible (unspecified)
	Value: Passing on traditional knowledge		Possible (unspecified)	Possible (unspecified)
	Value: Hunting, fishing and gathering the natural resources		Possible (unspecified)	Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Value: Access to Country for ceremonial and religious purposes		Possible (unspecified)	Possible (unspecified)
	Value: Caring for Country including protection of sacred sites		Possible (unspecified)	Possible (unspecified)
	Value: Access for hunting, fishing and cultural activities on Country.	Wiggan on behalf of the Mayala People v State of Western Australia (2018)	Possible (unspecified)	Possible (unspecified)
	Feature: two small islands and a small portion of a third island located in the Buccaneer Archipelago between Whirlpool Pass and Coppermine Creek		No	No
	Feature: The Sea Country (sandbanks)	DBCA (2023)	No	Possible
	Feature: Coral reef systems, estuaries and mangrove communities Value(s): niwarda, jalnggoon (oysters), alngir (trochus), goowarn (Pinctada maxima) pearl shell, many kinds of fishes and a place to hunt turtle and collect useful materials such as ambool (baler shell) and ngoolnga (Trumpet Shell) used for carrying water.	Mayala Inninalang Aboriginal Corporation (2019)	Possible (turtles and fishes) No (all other values)	Possible (all features and values)
	Feature: Continental shelf and sheltered bays support migratory pathways, calving and nursing habitat for (1) humpback whales (2) pygmy blue whales.		(1,2) Possible	(1,2) Possible
	Value(s): • saltwater fish (1) • turtles and turtle eggs (2) • dugong (3) • crabs (4) and marrarn (mangrove jack) (5) • barrbal (golden lined spinefoot) (6)		(1 - 4, 6 - 13) Possible (5) No	Possible (all)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	• jiyimarramarra (spinefoot) (7) • gambarl (Surgeonfish) (8) • aalngir (trochus) (9) • clam shell (10) • ngoolnga (Trumpet shell) (11) • aamboorl (Baler shell) (12) • oyster (13)			
	Value: Loolool (Whale sharks)		Possible	Possible
	Value: Marine environment		Yes	Yes
	Feature: Baler shells were used to carry water on long journeys	DBCA (2022)	No	No
	Feature: Ochres and clays used for ceremonial purposes, seasonal camping areas and aarli (fish) traps		No	No Possible (fish traps)
	Feature/Value: • Marrgoorr (coral) (1) and marnany (reef) communities (2) • Mangrove communities (3) • Noomool (seagrass) (4) and laanyji (macroalgae) communities (5) • Water and sediment quality (6) • Geomorphology including beaches (7) • Subtidal filter-feeding communities (8) • Intertidal sand and mudflat communities (9) • Goorlil (marine turtles) (10) • Aarli (fish) including joorroo (sharks) and barnamb (rays) (11) • Odorr (dugongs) (12)		(6, 10 - 14, 16, 17) Possible (1 - 5,7 – 9, 15) No	Possible (all, shore line accumulation) No (15)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	• Miinimbi (whales) (13) and bayalbarr (dolphins) (14) • Linygurra (estuarine crocodiles) (15) • Sea and shore garrabal (birds) (16) • Invertebrates (17)			
	Value: Intergenerational transmission and knowledge of Sea Country		Possible (unspecified)	Possible (unspecified)
	Value/s: • fish (aarli) (1) • turtles (goorlil) - green turtles (2), flatback turtles (3), loggerhead turtles (4), hawksbill turtles (5), leatherback turtles (5), olive ridley turtles (6) • dugongs (odorr) (7) • saltwater crocodiles (linygurra) (8) • reef (marnany) (9) • mangroves (10) • whale sharks (loolooloo) (11) • humpback whales (miinimbi) (12) • snubfin dolphins (13) • humback dolphins (14) • mud crabs (ngarrangg) (15) • rock oysters (16) • trochus (alngir) (17) • pearl oyster (goowarn) (18)		(1 – 7, 11-14 17, 18) Possible (8 - 10, 15, 16) No	(1 – 7, 9 - 18) Possible (8) No
	Feature: Ocean		Yes	Yes
Nyul Nyul	Value: Tjukurrpa (Dreaming Story)	Indigenous Desert Alliance. n.d.	Possible (unspecified)	Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Feature: Middens near the coast	Dobbs, *et al*. (2015)	No	No
	Feature: Burial grounds near the coast		No	No
	Value: Caring for Country including preserving routes for fish movement for breeding, and erecting signs		Possible (unspecified)	Possible (unspecified)
Yawuru	Feature: Camp sites including middens and shells	Yawuru RNTBC (2014)	No	No
	Feature: Snubfin Dolphin (1), fish including sharks and rays (2), and migratory birds (3)		Possible (all)	Possible (all)
	Value: Cultural obligation to care for country		Possible (unspecified)	Possible (unspecified)
	Value: Yawuru traditional ecological knowledge associated with Sea Country resources		Possible (unspecified)	Possible (unspecified)
	Value: Reefs and sea-grass beds		No	Possible (all)
	Value: Mangrove communities		No	Possible
	Value: Rights, access to and management of Country including the waters	Rubibi Community v State of Western Australia (2006)	Possible (unspecified)	Possible (unspecified)
	Value: Cultural obligations to respect the Dreaming and spirits and to continue cultural traditions	DBCA (2023)	Possible (unspecified)	Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Feature: Nagulagun (Sea Country) includes all that lives in the sea: • Fish (1) • Turtles (2) • Dugongs (3) • Nagula (seawater) (4) • Seabed (5) • Barnany (the reefs) (6) • Muri (tidal creeks) (7) • Jani (white sandy beaches) (8) • Seagrass meadows (9) • Jabarlbarl (mudflats and claypans) (10) • Gamirda-gamirda (shorebird) habitat (11) • Jani and intertidal flats (12) • The wirrjinmirr/willie creek wetlands system (13) • Gundurung (mangroves) (14) • Salt flats (15) • Nimalaica/nimmalarragun wetland (16) • Ngunungurrukum/coconut wells lagoon (17)		(1 - 5) Possible (6 - 17) No	(1-6, 9, 14) Possible (7, 8, 10 – 13, 15-17) No
	Value: Knowledge associated with cultural activities		Possible (unspecified)	Possible (unspecified)
	Value/s: • Jurru (snake like beings associated with both salt and fresh water that protect Yawuru country) (1) • Cultural dreaming areas (Bugarrigarra sites and tracks) (2) • Rayi sites (spirit birth and origin sites) (3) • Mangrove communities (gundurung) (4) • Saltmarsh and saline grassland communities (bundu) (5)	Department of Parks and Wildlife (2016)	(1, 3) Possible (unspecified) (2, 4, 5,10,11-13) No (6 - 9, 14 - 25) Possible	(1, 3) Possible (unspecified) (2, 5, 11, 12) No (4, 6 - 10, 15 -25) Possible

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	• Water and shore birds (gamirda) (6) • Marine turtles (gurlibil) (7) • Green turtles (8) • Dugong (nganarr) (9) • Sandbars (gidi gidi) (10) • Mudflats (11) • South sea pearl oyster (guwarn) (12) • Cockles (13) • Conch (mala) (14) • Crab (wanggaja) (15) • Threadfin salmon (16) • Mullet (gurlban) (17) • Catfish (langa) (18) • Queenfish (murruwaran) (19) • Bluebone or blackspot tuskfish (20) • Snapper (yilany) (21) • Rays (22) • Snubfin dolphins (23) • Bottle nose dolphins (24) • Humpback whales (25)			
Dambeemangarddee	Value/s: • rock cod (jimbiridj) (1) • baler shell (ngarlanggarnanya) (2) • blue crab (gandjeelaadj) (3) • flat head fish (beelbaba) (4) • creator snake (unggudia) (5) • dugong (waliny) (6) • turtle (julawaddaa) (7) • estuarine crocodile (goiyoiya) (8) • whale (ngunuubange) (9) • dolphin (jigeedany) (10)	DBCA (2022)	No (all other values) (6, 7, 9, 10, 14, 17) Possible (5, 22) Possible (unspecified)	(8, 12) No Possible (all other values, shoreline accumulation)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	• sea birds (11) • owl, emu, kangaroo (12) • barramundi (Ilerdda) (13) • fish (jaiya) (14) • crabs (ganbaneddee) (15) • oysters (marlinju) (16) • green turtle (waarlee) (17) • coral reefs (waddaroo) (18) • beaches (galaab) (19) • mangrove (jindirm) (20) • seagrass beds (julum) (21) • Lai Lai narratives (22)			
Karajarri, Nyangumarta and Ngarla	Value/s: reefs, coastal creeks, mangroves, intertidal flats, fish traps, shell middens, Pulany (Spirit Snakes)	Department of Parks and Wildlife (2014)	No (all) Possible (Pulany - unspecified)	Possible (all) (shoreline accumulation only)
Mangala	Feature: resources including • bird eggs (shags [cormorants], seagull, divers) • turtle eggs • dugongs • turtle • mullet, bluebone, whiting, snapper • oysters, mussels, crabs, prawns, scallops, cockles, little 'redies', black snapper	Oxenham on behalf of the Malanga People v State of Western Australia (2018)	Possible (dugongs, turtles) No (all other values)	Possible (all values)
	Value: access to Country		Possible (unspecified)	Possible (unspecified)
	Feature: resources including dugong, green and loggerhead turtles and sharks.	Statton *et al*. (2021)	Possible (all)	Possible (all)
	Value: traditional knowledge maintains records of freshwater seeps in the submerged landscape.		Possible (unspecified)	Possible (unspecified)
	Feature: resources including fish, shellfish, turtles and dugong.	Briggs and Green, (2008)	Possible (all)	Possible (all)
	Feature: archaeological sites.		Possible (submerged)	Possible (submerged)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Feature: green sea turtles, dugongs, shags and bottlenose dolphins are species of cultural significance.	Malgana Land and Sea Management *et al*. (2021)	Possible (species)	Possible (species)
	Value: sharing and controlling the sharing of knowledge.	Lyons *et al*. (2021)	Possible (unspecified)	Possible (unspecified)
Nimanburr	Value: Valentine Island	Marshall (2020)	No	No
Nyangumarta and Karajarri	Feature: Resources including • Pirrala (Threadfin Salmon), Ulu (Bluebone Groper), Yilany (Mangrove Jack), Wangkaja (Mudcrab), • Janga (Oyster) and Riji/Jakuli (Pearl Shell)	Karajarri Traditional Lands Association (2014)	No (all)	Possible (all)
	Feature: Saltwater habitats, including • Wintirri (sandy beaches, dunes and cliffs), • Wangku (rocky headlands), • Puntu (intertidal mudflats/freshwater seepages), • Parnany (reefs) and • Wankurru (deep sea)		No Possible (deep sea only)	No Possible (reefs and deep sea)
	Value: management of access to coastal areas prevents degradation to landscapes, cultural sites and biodiversity values		Possible (unspecified)	Possible (unspecified)
	Value: Caring for Country including maintaining cultural sites in coastal and inland areas		No	No (Inland coastal locations)
	Value: Areas of Parnany (reef), Wirntirri (sea grass) and Wurrja (seaweed) along the Karajarri coastline		No (Location specific)	Possible (shoreline accumulation only)
	Value: Fishtraps and middens along the Karajarri coast		No	Possible (shoreline accumulation only)
	Value: Connection to Country and Sea Country (responsibility to look after, the sea and coastline within the claim area)	WC2000/002-1 (2000)	No	Possible
	Feature/Value: 'The Pukarrikarrajanka Dreaming', and spiritual beings continue to inhabit specific places including area Eighty Mile Beach Marine Park.	Department of Parks and Wildlife (2014)	No (Location specific)	No (Location specific)
	Features: • Reefs, coastal creeks, mangroves and intertidal flats • Fish traps and shell middens		No (all)	Possible (all)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Value: Stories, Songlines and sites are embedded within the Eighty Mile Beach and Cape Keraudren areas		No (Location specific)	No (Location specific)
	Value: Cultural obligation to protect and educate visitors on Eighty Mile Beach		No (Location specific)	No (Location specific)
	Feature/Value: Resource collection at thalu sites. Eighty Mile Beach contains important cultural sites including special sites known as 'increase sites'		No (Location specific)	Possible (shoreline accumulation only)
	Value: Customary use of the area includes camping, nature appreciation, fishing, hunting and other harvesting activities. • Fish [hunting] • Turtle [hunting]		No	Possible (unspecified)
	Interest: Water		Yes	Yes
	Feature: Archaeological sites at Eighty Mile Beach	Yu (1999)	No (Location specific)	No (Location specific)
	Value: Strong spiritual relationship to water; connection to Sea Country		Possible (unspecified)	Possible (unspecified)
	Value: Dreamtime stories associated with water sources and their significance		Possible (unspecified)	Possible (unspecified)
	Feature: Coast old shell middens, fish traps and fishing.	Weir (2011)	No	Possible (shoreline accumulation only)
	Value: two rocks (unspecified) on the coast associated with cultural stories and lessons about tide and reef safety.	Yamatji Marlpa Aboriginal Corporation (2016)	No	Possible (unspecified)
	Feature: Eighty Mile Beach important place for the movement of the Karajarri people in the claim area including coastal areas for ritual and economic purposes.	WC08/4 (2009)	No (Location specific)	No (Location specific)
	Value: Eighty Mile Beach (strong connection to the place and surrounding waters)	Nyangumarta Warrarn Aboriginal Corporation and	No (Location specific)	Possible (shoreline accumulation only)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Feature: The coastline dotted with sites of special significance; several of these sites are associated with The Dreaming (Pukarrikarra).	Yamatji Marlpa Aboriginal Corporation (2022)	No	Possible (unspecified)
	Value: Nyangumarta population live by the sea and use it for cultural and recreational purposes - fresh fish such as whiskered salmon, black tipped reef shark, saw fish, stingrays and oysters.		No (Location Specific)	Possible (all)
Nyangumarta, Karajarri and Ngarla	Value/s: saltwater fish, turtles, dugong, crabs and oysters. Value/s: Sea Country is culturally significant and important to their identity.	Director of National Parks (2018)	Possible (all)	Possible (all)
Wunambal Gaambera, Balanggarra, Ngarinyin and Miriuwung Gajerrong	Value/s: • creator snake/rainbow serpent (wunggurr) (1) • turtle (manggurru), dugong (balguja), dolphins (2) • reefs (warrurru), fish traps, barramundie (3) • mangrove jack, blue bone groper, mud crabs, oysters, sandstone caves, mullet, silver bream, coral trout, sting rays, cockle shells, (4) • saltwater crocodile (5) • pelican, sharks, saltwater salmon, saltwater catfish (6)	Department of Parks and Wildlife (2016)	(1) Possible (unspecified) (5) No Possible (all other values)	(1) Possible (unspecified) (5) No Possible (all other values)
	Value/s: • Wunggurr - Creator snakes, living in the sea. (1) • Saltwater fish, turtles, dugong, crabs and oysters.	Director of National Parks (2018)	(1) Possible (unspecified) Possible (all other values)	(1) Possible (unspecified) Possible (all other values)
Unspecified	Feature: the ocean can include sacred sites and Songlines. Value: people have kin relationships to important animals, plants tides and currents.	Smyth (2008)	Possible (all features and values) (unspecified)	Possible (all features and values) (unspecified)
	Feature: archaeological sites in submerged landscapes.	Crabtree et al. (2021)	Possible	Possible
	Value: Sea Country has customary law defining ownership and management rights and responsibilities.	Muller (2008)	Possible (unspecified)	Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Value: knowledge of Sea Country Value: connection to Sea Country Value: care for Sea Country Value: the extent of Sea Country is determined by the travels of dreaming ancestors. This is recorded and conveyed through songlines.	Kearney *et al* (2023)	Possible (all values) (unspecified)	Possible (all values) (unspecified)
	Feature; archaeological sites indicate that islands were occupied prior to sea level rise.	DBCA (2020)	No	Possible (submerged)
	Value: Sea Country includes values, places, resources, stories and cultural obligations. Value: activities relating to resources included: • dugong hunting • turtle hunting • turtle egg collecting • seabird egg collecting • spearing fish • reef trapping fish • herding fish • line fishing • collecting fish in stone fish traps • poisoning fish • gathering shellfish and other marine resources.	Smyth (2007)	Possible No (activities)	Possible Possible (activities and fauna present)
	Value: people have kinship relationships with every plant and animal. Value: certain species, including fish and seafood, must not be eaten during initiation rituals due to their sacredness to the creation being Barrimirndi. Breaking this law may lead to cyclones.	Juluwarlu Aboriginal Corporation (2004)	Likely to occur No	Likely to occur No

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	***EMBA***
	Feature: tangible and intangible heritage. Feature: archaeological evidence of varied occupation and adaptation. Value: a distinct way of life centred around the use of limited water and coastal resources.	Macfarlane and McConnell (2017)	Possible (unspecified) Possible (submerged) No	Possible (unspecified) Possible (submerged) Possible (unspecified)

4.9.4.2 First Nations Archaeological Heritage Assessment

First Nations archaeological heritage in relation to the North-West Marine Region (NWMR) is described in **Appendix C-1**.

The Department of Planning, Lands and Heritage (DPLH) Aboriginal Cultural Heritage Inquiry system was searched for the EMBA, which indicated 728 Registered Aboriginal Places (**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 DPLH and relevant local First Nations communities.

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

4.9.4.2.1 Submerged Cultural Heritage

Planned activities overlapping the Ancient Landscape have potential for seabed disturbance. Woodside engages a consultant to undertake a desktop review based on geophysical and bathymetric data, for the potential of submerged archaeological material, in any areas subject to seabed disturbance and at a depth of less than 130 m. This approach is consistent with Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW, 2024c). These assessments did not identify any archaeological sites or values in Commonwealth waters that may be impacted by the PAA. An assessment of the potential impacts on archaeological material by the proposed activity is discussed in **Section 6.10** (First Nations Cultural Features and Heritage Values Assessment).

Archaeological material on the Ancient Landscape is a relevant matter for the proposed activity as there is overlap between the PAA and the Ancient Landscape, and potential for seabed disturbance from planned activities and therefore potential for impacts to archaeological material. Woodside is triggered to undertake desktop assessments of archaeological potential, based on geophysical and bathymetric data, for any seabed disturbance at depths of less than 130 m.

A review will be undertaken by a suitably qualified marine archaeologist for activities that could create newly established seabed disturbance in areas where the seabed depth is less than 130 m. This approach is consistent with Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW, 2024c). Further information regarding compliance under this assessment process is outlined in **Section 6.10** of this EP.

Further information regarding First Nations archaeological heritage in relation to the Ancient Landscape in the North-west Marine Region (NWMR) is described in **Appendix C-1**.

4.9.4.3 Consultation Feedback to Inform Existing Environment Description

First Nations cultural values are communally held. This is reflected in Vision 3 of Dhawura Ngilan that “Aboriginal and Torres Strait Islander heritage is managed... according to community ownership” (Heritage Chairs of Australia and New Zealand, 2021). Dhawura Ngilan also specifically notes that “Aboriginal and Torres Strait Islander...intangible knowledge systems, which are held in Songlines and language, are endangered. This knowledge is held by Elders and the community...” Through consultation with relevant persons, Registered Native Title Bodies Corporate have identified or raised topics relating to environmental values of cultural interest. These include a broad interest in the marine fauna, including whales and turtles (**Appendix F**).

During consultation, BTAC advised it has a cultural obligation to care for the environmental values of Sea Country (**Appendix F**). In the course of consultation specific to another Woodside EP, BTAC raised the importance of archaeological sites on nearshore islands. Given the EMBA for this activity

extends to nearshore areas coastally adjacent to BTAC native title lands, these values may be relevant in the event of an unplanned hydrocarbon spill.

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

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

Table 4-20 Summary of Sea Country values received via consultation

Relevant First Nations Group / Individuals	Context	Description of Value / Feature / Interest	Potential for Overlap	
			PAA	EMBA
Bardi and Jawi Niimidiman Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Balanggarra Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Buurabalayji Thalanyji Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Connection to Sea Country Enduring deep connection to sea country north of Onslow, extending out to Islands off the Pilbara coast such as the Montebello islands, Barrow Island and the Mackerel Islands	Possible	Possible
Dambimangari Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Gogolayngor Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Karajarri Traditional Lands Association	Consultation for this EP	*No values raised*	-	-
Kariyarra Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Turtles	Possible	Possible
		Value: Access to Sea Country (1) Accessing Sea Country for fishing, trapping, crabbing catching turtle, hunting dugong, using stingray barbs for spears and collecting shellfish. (2) Visiting offshore islands at low tide	No (all)	Possible (all)

		Value: Marine species resources Resource species of cultural interest to Kariyarra people include marine mammals, fish, molloscs including bivalves, gastropods and cephalopods.	Possible	Possible
		Value: The existence of intangible cultural heritage including the Yinta (associated with Sea Country). From Kariyarra Native Title documents it is clear that Yinta are significant cultural/spiritual sites, often a pool or water source but possibly a hill or other feature. These are, at least generally, associated with creation beings and are a core part of cultural rights to land in determining who can use or speak for an area.	Possible	Possible
		Interest: Coastal Landforms (Cultural interest)	No	Possible
		Interest: Coastal Native Vegetation (Cultural interest)	No	Possible
		Feature: Cultural interest in cultural heritage sites associated with the coast and the ocean.	Possible	Possible
		Value: Traditional fishing and gathering rights in the ocean	Possible	Possible
		Value: Cultural interest in intangible cultural heritage associated with the coast and the ocean. (1) Presence of mythic snakes	Possible	Possible
		Value: Intergenerational Knowledge *In addition to their immediate value as sustenance, the gathering and preparation of these resources are informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these communities may be impacted where there is an impact at the species/population level. Impacts to resource collection would be limited to temporary exclusion in areas where there are hydrocarbons present, including shoreline accumulation. Relevant cultural authorities will be engaged in the event of a spill that may affect them...*	Possible	Possible

		Value: Cultural obligations to care for Country, including Sea Country. Value: Secret Habitat Totems associated with Sea Country		
		Interest: Assertion of sea rights in native title claim area Interpreted as general connection to country, assertion of rights to access country and cultural obligation to care for environmental values of sea country (1) Having duties to look after and protect all KACs Sea Country.	No (based on NT determined area)	Possible
Murujuga Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Mermaid Sound (1) The ecosystem health of Mermaid Sound	No	Possible
		Value: Whales (1) Whales and other species of totemic importance need to be protected, including their populations, biodiversity, and migration patterns. (2) A whale Thalu is an increase at the totemic site that brings whales into the beach.	Possible (all)	Possible (all)
		Value: Dolphins There are cultural ceremonies associated with communicating with dolphins	Possible	Possible
		Value: Dugongs Dugongs are a food source associated with seagrasses near Gidley Island	Possible	Possible
		Value: Fish Specific mentions of fish included There are Thalu ceremonies associated with increasing fish stocks	Possible	Possible

		Value: Sea Snakes Sea snakes were specifically mentioned as culturally important species	Possible	Possible
		Value: Turtles (1) Flatback, green, hawksbill, loggerhead and leatherback turtles; Songline The Songline associated with the turtle comes from Fortescue to Withnell Bay. This song is sung by four or five tribes for day and night without consuming food or water. (2) Flatback, green, hawksbill, loggerhead and leatherback turtles: They are culturally important species that moves through Mermaid Sound. Turtles are most often seen in shallower areas and where there are seagrasses. (3) Most beaches are nesting sites for turtles, including those on Gidley and Legendre Islands... which also identifies Rosemary Island as the most important hawksbill turtle nesting site in Western Australia.	Possible (1,2) No (3)	Possible (all)
		Feature: Coral Concerned about coral bleaching because corals are important. Beautiful colours. They also attract a lot of other things. Fish carry coral spawn like bees pollinate flowers. If fish were looked after, the corals would get brighter and brighter (by transmitting nutrients and performing other ecosystem services, fish can be symbiotic with corals). Locations identified during consultation include Withnell Bay; Conzinc Bay; south west of Legendre Island.	No	Possible
		Feature: Seagrass (1) Seagrasses provide protection for animals. (2)Locations identified during consultation include Conzinc Island; between Angel and Gidley Islands.	No	Possible

		Feature: Mangroves (1) Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries. Locations identified during consultation include Conzinc Bay north end; Flying Foam Passage; Searipple Passage; north-east bay of West Lewis Island.	No	Possible
		Feature: Macroalgal communities Are important primary production sites, habitats, and food sources (not explicitly identified by elders).	No	Possible
		Feature: Subtidal soft-bottom communities Support invertebrate diversity (not explicitly identified by elders).	No	Possible
		Feature: Intertidal sand and mudflat communities Important primary production sites, support invertebrate diversity and provide food for shorebirds (not explicitly identified by elders).	No	Possible
		Feature: Rocky shores Habitats for intertidal organisms and provide food for shorebirds (not explicitly identified by elders).	No	Possible
		Feature: Other areas of Mermaid Sound of importance (including Conzinc Bay) (1) Fish traps: There are known fish traps in Conzinc Bay, and others would have or do exist in coastal areas of islands, such as Angel and Gidley Islands. People still use the Conzinc Bay fish traps regularly for catching mangrove jack, trevally and other fish.	No	Possible
		Value: Squid (1) Squidding (harvesting of squid from the ocean) around Conzinc Bay	No (based on specific location)	Possible
		Value: Appropriate cultural authority for Murujuga.	No	Possible

		Interest: Management of onshore heritage sites	No	
		Interest: Submerged Heritage Engage with researchers on options to identify potential submerged heritage.	Possible	Possible
		Value: Songlines The potential impact on Jinna (Songlines) due to the lack of broader-scale bathymetric information for the submerged landscape	Possible	Possible
Mayala Inninalang Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Nganhurra Thanardi Garrbu Aboriginal Corporation representing Baiyungu and Thalanyji people	Raised during the course of consultation for another EP	Value: Whales and Whale Sharks	Possible (both)	Possible (both)
		Feature: Marine parks	No	Possible
Ngarluma Aboriginal Corporation	Raised during the course of consultation for another EP	Interest: Management of onshore heritage sites	No	No
		Interest: Submerged Heritage Engage with researchers on options to identify potential submerged heritage.	Possible	Possible
Nimanburr Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Nyangumarta Karajarri Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Nyul Nyul PBC Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-

Robe River Kuruma Aboriginal Corporation	Raised during the course of consultation for another EP	Feature: Coastline	No	Possible
		Feature: Underwater heritage	Possible	Possible
Wanjina-Wunggurr (Native Title) Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Wanparta Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Connection to Sea Country *The Ngarla People have a deep spiritual connection to Sea Country*	Possible	Possible
		Feature: Nearshore Islands (particularly Solitary Island/ Jarrkunpungu) Value: Intangible Cultural Heritage (Dreaming Stories) (1) Wanparta stated that they are linked to the dreaming stories through the interconnecting islands (2) Wanparta legal representative highlighted that there are Dreamtime stories through the nearshore island (Solitary Island/ Jarrkunpungu)	No (all)	Possible (all)
		Value: Cultural Obligation to look after Sea Country Values *Extremely important to Ngarla people, and they feel a responsibility to look after the ocean and lore.*	Possible	Possible
		Feature: Sea (Fresh and Salt Water) Value: Intangible Cultural Heritage (Dreaming Stories) *Comments that we are a sea people connected through both fresh and salt water with Dreamtime stories that do connect through the sea.*	Possible	Possible

		Feature: Sea (Ocean/Water) *(1) Wanparta noted that they feel a sense of responsibility to keep looking after the ocean. They noted that they are very connected to the health of the ocean, they have a sense of responsibility to look after the ocean (Law and culture). If impacted, this would impact future generations and how Law is practiced* *(2) Wanparta legal representative explained the emblems and totems reflected on the Wanparta Aboriginal Corporation logo. She noted that the dark blue on the logo represents the ocean (and that their Native Title) extends into the ocean).* *(3) The importance of water was emphasised by the group* *(4)* Protection and managment of marine life and healthy ocean plays a significant role in lore, culture and customs	Possible (all)	Possible (all)
		Value: Marine Species Wanparta legal representative explained the emblems and totems reflected on the Wanparta Aboriginal Corporation logo. The animals depicted on the logo are totemic species and include the (1) Kestrel, (2) Octopus, (3) Spiny Brim and (4) Sting Ray.	(1) No Possible (all)	(1) No Possible (all)
Wilinggin Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Wirrawandi Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Whales (General interest around management of impacts to whales)	Possible	Possible
		Value: Turtles (General interest around management) Wirrawandi asked whether turtle monitoring programs are still in place	Possible	Possible
		Feature: Rock art Wirrawandi asked whether air emissions from activities impacts rock art & what Woodside does to minimise impacts to rock art. Wirrawandi also asked for more community information on rock art.	No	Possible

		Interest: Submerged heritage *(1) Wirrawandi asked where sites of underwater heritage have been recently found* *(2) Wirrawandi asked about impacts to the seabed from planned activities, and what is considered in relation to submerged cultural heritage, particularly given the recent finding of artefacts.*	Possible	Possible
Wunambal Gaambera Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Yawuru Native Title Holders Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Yindjibarndi Aboriginal Corporation	Consultation for this EP	*No values raised*	-	-
Yinggarda Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Coastal Fishing Local communities enjoy fishing along the coast, including for (1) Shark Bay Mullet that is an important resource.	No	Possible
		Value: Ecosystem Health *Plants, animals and the environment are inexorably linked to their culture*	Possible	Possible
		Value: Dugongs	Possible	Possible
		Feature: Seagrass Important food source for dugongs (Shark Bay)	No	Possible

		Value: Whales 1) potential impact to migration patterns of whales; (2) and potential collisions with vessels	Possible	Possible
SELF-IDENTIFIED FIRST NATION REPRESENTATIVE GROUPS				
Ngarluma Yindjibarndi Foundation Ltd	Consultation for this EP	*No values raised*	-	-
Save Our Songlines, Josie Alec and Raelene Cooper	Consultation for this EP	*No values raised*	-	-
	Raised specific to Petroleum Activities Program Raised in context of general Scarborough Project activities	Feature: Songlines, dreaming and energy lines (unspecified)	Possible (unspecified)	Possible (unspecified)
		Feature: Whales – including migratory patterns	Possible	Possible
		Interest: Turtles – including migration patterns	Possible	Possible
		Interest: Dugongs - unspecified	Possible	Possible
		Interest: Plankton - unspecified	Possible	Possible
		Interest: Seagrass - unspecified	No	Possible
		Interest: where saltwater and freshwater meet	No	Possible
	Raised in Concise Statement and Affidavit[3] in context of Scarborough seismic activities	Value: Caring for Country Ms Cooper asserts she and Ms Alec are holders of women's lore with cultural obligations to protect, preserve and promote the environment, animals and plants threatened by the Activity (specific to Seismic) Ms Cooper asserts the spiritual health and wellbeing of Murujuga and all the plants and animals present on Murujuga and connected to the songlines in and around Murujuga	Possible (unspecified)	Possible (unspecified)
		Feature: Whales Ms Cooper asserts the following values: "Whales carry important songlines, the whale Dreaming, and connection between land and sea"	Possible (whales) Possible (songlines,	Possible (whales)

		"As the biggest animal on earth, the whale has the greatest heart connection to songlines, people and animals and carries the songlines around the ocean, connecting places." “Whale Dreaming story has a strong connection to the heart centre in each person, this story helps people to open up and to realise, understand and raise awareness of the environment and everything humans are connected to.” "In their own families, female whales have a caretaker or midwife role, and those who are connected to the Whale Dreaming and carry the women's lore also have obligations as caretakers of the earth." "The women's lore that Ms Alec and Ms Cooper carry is the songline of the whale, which is important for sustaining the creation of all animals and humans." "Ms Alec and Ms Cooper connect to the whales like this through their songlines, they sing to the whales, the whales feel that song and the connection through their hearts, regardless of the distance." "the whales tell Ms Alec and Ms Cooper a story, and Ms Alec and Ms Cooper are the people who feel and who are connected to that story. Ms Alec and Ms Cooper have that feeling of connection inside them all the time, they live and breathe it, they are in and everything about it." "Because each animal uses songlines for migration, breeding and feeding, the disruption or distortion to the songlines causes the animals to become disoriented, confused or lost.”	unspecified)	Possible (songlines, unspecified)
		Interest: Whales Interest: Pygmy Blue whales “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales iii. whales' sonar communications systems, particularly between mothers and calves, from sound and vibrations emitted by the Activity v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and vi. vehicle collision and/or entanglement with marine fauna"	Possible (whales)	Possible (whales)
		Interest: Turtles "Other animals, such as turtles, dolphins, dugongs, and krill follow the whale's songlines, because they're all connected together - the whale creates a path for the other animals like 'grading a road'."	Possible (turtles)	Possible (turtles)

		"Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and vi. vehicle collision and/or entanglement with marine fauna"		
		Interest: Dugongs "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)"	Possible (dugong)	Possible (dugong)
		Interest: Pelagic fish "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales"	Possible (fish)	Possible (fish)
		Interest: Sharks "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)"	Possible (sharks)	Possible (sharks)
		Interest: Plankton "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: i. chronic mortality to some marine organisms, including zooplankton	Possible	Possible
		Interest: Water quality	Yes	Yes

		"Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: iv. potential operational discharges associated with the presence of ships in the area, including potential impacts to water quality v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)		
		Interest: Seabirds "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)	Possible	Possible
		Interest: Where saltwater and freshwater meet "The places where the saltwater from the sea and the freshwater from the land connect are where the biggest energy lines[9] are, and that connection is a core of creation relevant to a Dreaming story."	No	Possible
		Value: Rock Art "Rocks at Murujuga symbolise stories, the totems (the depicted artwork) - whether representing plants or animals - and tell a story of their history, and how long they've been there."	No	Possible (submerged)
		Value: Bungarra, Eagle, Kangaroo Identified totemic species	No	No
		Interest: Murujuga "When Ms Alec and Ms Cooper and their people stand on Country they are connected to their songlines through the rocks. As holders of women's lore, Ms Alec and Ms Cooper put healing energy into the rocks and use that to heal the songlines."	No	Possible

[9] Although Raelene Cooper, Josie Alec and Save our Songlines referred to and described Energy Lines, these are understood to be the same as songlines and this document therefore refers to songlines

		"Ms Alec and Ms Cooper connect to their bloodline, old people and songlines through Country, including the rocks at Murujuga, which are encrypted with ancient stories that keep connection to the bloodline and songlines alive and well."		

4.9.5 Summary of Cultural Features and Heritage Values

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

The cultural features and heritage values identified in **Section 4.9.4.1** and **Section 4.9.4.3** confirms whether there is any potential for these to exist within the PAA 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.

A summary of cultural features and heritage values identified through both consultation and desktop assessment is provided in **Table 4-22**.

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

Table 4-21 Summary of Cultural Features and Values

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

Identified cultural features and heritage values	Context	EP Source		Potential for overlap	
		Consultation Feedback	***Desktop Literature Assessment***	***PAA***	***EMBA***
Ceremonial sites	Places where ceremony (e.g. thalu ceremonies) are performed. All identified ceremonial sites are located onshore.	✓	✓	No	Possible (unspecified)
Cultural obligations to care for Country	Cultural obligation to care for the environmental values of Sea Country. Exclusion of Traditional Custodians from Sea Country or decision making processes may inhibit ability to care for Country.	✓	✓	Possible (unspecified)	Possible (unspecified)
Knowledge of Country/ customary law and transfer of knowledge	The preservation and transmission of knowledge is dependent on the preservation of the environment generally. Exclusion of Traditional Custodians from Sea Country may inhibit the transfer of knowledge.	✓	✓	Possible (unspecified)	Possible (unspecified)
Connection to Country	Connection to Country is described in publicly available literature as “important to the Traditional owners’ spirituality and religion”. Connection to Country may be damaged where people are displaced or disrupted (e.g. during colonisation) or where there is a loss of technical skills or environmental knowledge	✓	✓	Possible (unspecified)	Possible (unspecified)
Access to Country	Limitations on Traditional Custodians accessing or enjoying areas of Sea Country	✓	✓	No	No (No limitations on access beyond the Operational Areas)
Kinship systems and totemic species	Traditional Custodians have connection to species through kinship and totemic systems. An individual may have obligation to care for or not consume a species to which they are kin.	✓	✓	Possible	Possible
Resource collection	Fishing, hunting, gathering of marine species including marine mammals, marine reptiles, fish and invertebrates.	✓	✓	No	Possible
Marine ecosystems and species					
Water quality	Interest only, raised as a natural environment interest	✓	✓	Possible	Possible

Identified cultural features and heritage values	Context	EP Source		Potential for overlap	
		Consultation Feedback	***Desktop Literature Assessment***	***PAA***	***EMBA***
Marine species	Generally raised in consultation and literature as an interest	✓	✓	Possible	Possible
Marine mammals: Whales	Generally raised in consultation and identified in publicly available literature Thalu species of totemic importance Linked to Songlines and Dreaming stories Humpback whales in particular	✓	✓	Possible	Possible
Marine mammals: Dolphins	Cultural ceremonies associated with dolphins Culturally important species	✓	✓	Possible	Possible
Marine mammals: Dugongs	Culturally important species Used as a resource	✓	✓	No	Possible
Marine reptiles: Marine turtles	Culturally important species and migration There are Thalu ceremonies associated with turtles Turtles and turtle eggs as a resource	✓	✓	Possible	Possible
Fish: Fish, whale sharks, sharks and rays	Culturally important species Used as a resource Law run through the sea, including fish There are Thalu ceremonies associated with increasing fish stocks Fish, including bream and sting rays are totemic species Fish, including sharks and rays raised as a natural environment interest	✓	✓	Possible	Possible
Cephalopods: Squid and Octopus	Thalu species of totemic importance Resource	✓	✓	Possible	Possible

Identified cultural features and heritage values	Context	EP Source		Potential for overlap	
		Consultation Feedback	***Desktop Literature Assessment***	***PAA***	***EMBA***
Intertidal communities: Bivalves, gastropods, echinoderms (sea urchins), crustaceans	Resource.	✓	✓	No	Possible
Seabirds	Culturally important species Birds (including shags, seagulls and osprey) and bird eggs as a resource	✓	✓	Possible	Possible
Benthic habitats: Macroalgal communities	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Shoreline habitats: Mangroves	Critical breeding ground for marine and terrestrial wildlife. Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries. Mangrove seeds as resource	✓	✓	No	Possible
Shoreline habitats: Intertidal sand/ mudflat communities	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Shorelines	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Marine Park/ coastal reserves	Interest and responsibility	✓	✓	No	Possible

4.9.6 Historic Sites of Significance

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

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

4.9.7 Historic Underwater Heritage

The protection of historic underwater heritage under Commonwealth and State legislation is described in **Appendix C-1.**

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 PAA. However, a number of sites (shipwrecks) exist within the EMBA. Table 4-22 lists recorded historical shipwrecks within 50 km of the PAA.

Table 4-22: Historic shipwrecks within 50 km of the PAA

Shipwreck	Distance from PAA to Shipwreck (km)
McDermott Derrick Barge No 20	46 km west (Export Trunkline Operational Area) 62 km south-west (Offshore Facility Operational Area)
Zelma	15 km south-east (Export Trunkline Operational Area) 115 km south-east (Offshore Facility Operational Area)
Trawler	48 km south-west (Export Trunkline Operational Area) 103 km south-west (Offshore Facility Operational Area)

4.9.8 World, National and Commonwealth Heritage Listed Places

No listed heritage places overlap the PAA. World, National and Commonwealth heritage places within the EMBA are identified in **Table 4-23. Appendix C-1** outlines the values and sensitivities of these places.

Table 4-23: World Heritage Properties and National / Commonwealth Heritage Listed Places within the EMBA.

Listed Places	Distance and direction from each Operational Area to Listed Place (km)
World Heritage Properties	
The Ningaloo Coast	268 km south west (Export Trunkline Operational Area) 284 km south west (Offshore Facility Operational Area)
National Heritage Places	
The Ningaloo Coast	268 km south west (Export Trunkline Operational Area) 284 km south west (Offshore Facility Operational Area)
Dampier Archipelago (including Burrup Peninsula)	Overlaps the Export Trunkline Operational Area 110 km south (Offshore Facility Operational Area)

Commonwealth Heritage Places	
Ningaloo Marine Area – Commonwealth Waters	290 km south west (Export Trunkline Operational Area) 302 km south west (Offshore Facility Operational Area)

4.10 Socio-economic Environment

4.10.1 Commercial Fisheries

Data from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) were used to identify if Commonwealth managed fisheries have fished within the PAA and EMBA in the most recently available five-year period of catch and effort data. FishCube data was also requested from the WA Department of Primary Industries and Regional Development (DPIRD) for the most recently available five-year period of fishery catch and effort data (2019-2023) to analyse the potential for interaction of fisheries with the PAA. Data was reviewed from the last five years as a subset of past fishing effort. This was deemed an appropriate period to represent potential future fishing effort over the lifecycle of this EP.

This information was used to determine relevant fisheries for consultation who may be impacted by the proposed petroleum activities. **Table 4-25** provides an assessment of the potential interaction and **Appendix C-1** provides further detail on the fisheries that have been identified through desk-based assessment and consultation.

A total of five Commonwealth and 23 State fishery management areas are located within the EMBA. Of these, 13 state managed fisheries have designated management areas overlapping the PAA. There are no Commonwealth managed fisheries recorded as operating within the PAA. Eight State managed fisheries were identified as having a potential interaction with the Petroleum Activities Program, within the PAA.

Table 4-24: Commonwealth and State commercial fisheries management areas overlapping the PAA and EMBA and potential for interaction during the Petroleum Activities Program

Fishery	Petroleum Activity Area		EMBA	Description
	Offshore Facility Operational Area	Export Trunkline Operational Area		Potential for interaction during Petroleum Activity Program ✗ no spatial overlap ✓ spatial overlap Blue shading indicates the possibility of interaction with the PAA
Commonwealth Managed Fisheries				
North West Slope Trawl Fishery	✗	✗	✓	The North West Slope Trawl Fishery management area overlaps the EMBA. The fishery operates off north-western Australia from 114°E to 125°E roughly between the 200 m isobath and the outer boundary of the Australian Fishing Zone (Keller and Curtotti, 2023). Fishing effort commenced in 1985 with vessel numbers between 1 and 6 vessels per year since 2005-2006 (Keller and Curtotti, 2023). Three vessels operated in the 2021-2022 season, decreasing from 4 in 2020-2021 season (Keller and Curtotti, 2023). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Southern Bluefin Tuna Fishery	✓	✓	✓	The Southern Bluefin Tuna Fishery management area overlaps the PAA and EMBA. The Southern Bluefin Tuna Fishery spans the Australian Fishing Zone, however since 1992, the majority of Australian catch has concentrated in south-eastern Australia. There has been no fishing activity recorded within the PAA over the last five years (Patterson and Dylewski, 2023a). Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Area.
Western Deepwater Trawl Fishery	✗	✗	✓	The Western Deepwater Trawl management area overlaps the EMBA. The fishery operates off the Western Australian coast, in the Gascoyne Region ranging between the North West Cape and Shark Bay. The fishery uses demersal trawling methods, in waters seaward of a line approximating the 200 m isobath (Kell *et al*., 2023). Fishing effort has been relatively low since 2005-2006, with 1 to 3 vessels active in the fishery since 2004-2005, and 2 active vessels recorded in 2021-2022 (Keller *et al*., 2023). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Western Skipjack Tuna Fishery	✓	✓	✓	The Western Skipjack Tuna Fishery management area overlaps the PAA and EMBA. The Western Skipjack Tuna Fishery spans the Australian Fishing Zone west of Victoria and the

Fishery	Petroleum Activity Area		EMBA	Description
	Offshore Facility Operational Area	Export Trunkline Operational Area		Potential for interaction during Petroleum Activity Program ✗ no spatial overlap ✓ spatial overlap Blue shading indicates the possibility of interaction with the PAA
				Torres Strait. The fishery is currently not active, and no fishing has occurred since 2009 (Patterson and Dylewski, 2023b). Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Area.
Western Tuna and Billfish Fishery	✓	✓	✓	The Western Tuna and Billfish Fishery management area overlaps the PAA and EMBA. However, the majority of Australian catch has concentrated off south-west Western Australia with occasional activity off South Australia. There has been no fishing activity recorded within the PAA over the last five years (Patterson *et al*., 2023). Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Area.
State Managed Fisheries				
Abalone Managed Fishery	✓	✓	✓	The Abalone Fishery management area overlaps the PAA. No commercial or recreational fishing is permitted north of Moore River, WA until further notice. Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Area.
Broome Prawn Managed Fishery	✗	✗	✓	The Broome Prawn Fishery management area overlaps the EMBA. Woodside considers there to be a potential for interaction with this fishery in the EMBA.
Cocos (Keeling) Islands Marine Aquarium Fishery	✗	✗	✓	The Cocos (Keeling Islands Marine Aquarium Fish Fishery management area overlaps the EMBA. The fishery also harvests from shallow, coastal waters between 15 m to 70 m (Newman *et al*., 2021). Woodside considers there to be a potential for interaction with this fishery in the EMBA.
Exmouth Gulf Prawn Managed Fishery	✗	✗	✓	The Exmouth Gulf Prawn Fishery management area overlaps with the EMBA and operates in the Exmouth Gulf, targeting species generally <50 m water depth. The fishery is limited to the spatial extent within the Exmouth Gulf and Muiron Islands. Woodside considers there to be a potential for interaction with this fishery in the EMBA.

Fishery	Petroleum Activity Area		EMBA	Description
	Offshore Facility Operational Area	Export Trunkline Operational Area		Potential for interaction during Petroleum Activity Program ✗ no spatial overlap ✓ spatial overlap Blue shading indicates the possibility of interaction with the PAA
Hermit Crab Fishery	✗	✗	✓	The Hermit Crab Fishery management area overlaps the EMBA. The Land Hermit Crab Fishery is a shoreline fishery active North of Exmouth, with crabs taken onshore at night by hand. The fishery is active in State waters and the EMBA. The activity is likely to occur predominantly in coastal waters outside of the PAA. Woodside considers it a possibility that interactions with this fishery may occur within the EMBA
Kimberley Crab Managed Fishery	✗	✗	✓	The Kimberly Crab Fishery management area overlaps the EMBA. The fishery is active in the EMBA, with an allocation of 1,200 units (600 traps) to license holders and an equivalent allocation of 600 traps to Traditional Owner groups (Johnston *et al*., 2023). Woodside considers there to be potential for interaction with the fishery within the EMBA only.
Kimberley Gillnet and Barramundi Fishery	✗	✗	✓	The Kimberley Gillnet and Barramundi Fishery management area overlaps the EMBA. The fishery is active within the EMBA, Woodside considers there to be potential for interaction with the fishery within the EMBA only.
Kimberley Prawn Fishery	✗	✗	✓	The Kimberley Prawn Fishery management area overlaps the EMBA. The fishery is active within the EMBA. Woodside considers there to be potential for interaction with the fishery within the EMBA only.
Mackerel Managed Fishery	✓	✓	✓	The Mackerel Managed Fishery management area overlaps the PAA and the EMBA. Historical fishing effort (2017-2023) indicates the fishery is active with <3 vessels reporting at the10NM CAES blocks, overlapping the Export Trunkline Operational Area. Up to 3 vessels have been active within the 60NM CAES block overlapping the Offshore Facility Operational Area. The fishery is managed through designated areas, and extends from coastal waters to the EEZ, in waters northwards of Cape Leeuwin to the NT border. Nominal catch rates in Area 2 (Pilbara) have been generally decreasing since 2004, partially driven by changes in operators in the fishery (Lewis and Watt, 2023). Woodside considers there may be potential for interaction with the Petroleum Activities Area and the fishery.

Fishery	Petroleum Activity Area		EMBA	Description
	Offshore Facility Operational Area	Export Trunkline Operational Area		Potential for interaction during Petroleum Activity Program ✗ no spatial overlap ✓ spatial overlap Blue shading indicates the possibility of interaction with the PAA
Marine Aquarium Managed Fishery	✓	✓	✓	The Marine Aquarium Managed Fishery management area overlaps the PAA and the EMBA. FishCube data for the fishery provided at 10 NM CAES blocks indicates between 4 – 6 licences were active between the 2017 -2023 seasons. The Marine Aquarium Fishery is a diver-based fishery and therefore restricted to relatively shallow waters. Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the Export Trunkline Operational Area and EMBA.
Nickol Bay Prawn Managed Fishery	✗	✗	✓	The Nickol Bay Prawn Managed Fishery management area overlaps the EMBA. The fishery is active within 10NM CAES blocks, which overlap the Export Trunkline Operational Area reporting up to 8 vessels within the 2017 -2023 seasons (Wilkin *et al*., 2023b). However, the Export Trunkline Operational Area is outside of the managed area for the extent of the fishery (Wilkin *et al*., 2023b) and therefore would not interact with operations in the fishery. Woodside considers there to be potential for interaction with the fishery within the EMBA only.
North Coast Shark Fishery	✗	✗	✓	The North Coast Shark Fishing area overlaps EMBA. The northern shark fisheries comprise of the North Coast Shark Fishery in the Pilbara and Western Kimberly (closed since 1998), and the Joint Authority of Northern Shark Fishery in the eastern Kimberly, which has not been active since 2008-2009 season (AFMA. 2021). Woodside considers there to be no interaction with the fishery and the Petroleum Activities Area.
Northern Demersal Scalefish Fishery	✗	✗	✓	The Northern Demersal Scalefish Fishery management area overlaps the EMBA. The fishery is active within the EMBA, Woodside considers there to be potential for interaction with the fishery within the EMBA only.
Onslow Prawn Managed Fishery	✓	✓	✓	The Onslow Prawn Managed Fishery (Area 3) management area overlaps the PAA and the EMBA. The fishery is active within the 60NM CAES block overlapping the Export Trunkline Operational Area reporting <3 vessels active during the 2017-2022 seasons (DPIRD, 2023). No fishing effort was recorded overlapping the Offshore Facility Operational Area. Woodside considers it a possibility that interactions with the fishery may occur in the Export Trunkline Operational Area and EMBA.

Fishery	Petroleum Activity Area		EMBA	Description
	Offshore Facility Operational Area	Export Trunkline Operational Area		Potential for interaction during Petroleum Activity Program ✗ no spatial overlap ✓ spatial overlap Blue shading indicates the possibility of interaction with the PAA
Pearl Oyster Managed Fishery (Zone 1 and 2)	✗	✗	✓	The Pearl Oyster Managed Fishery management area overlaps the EMBA. Fishing effort is mostly focused within coastal waters (10-15 m depth) with a maximum depth of 35 m (Lulofs *et al*., 2002), collecting wild oysters for use in the aquaculture production of pearls. These are collected from fishing grounds primarily off the coast of Eighty Mile Beach, smaller catches from the Lacepede Islands. Woodside considers it a possibility that interactions with the fishery may occur in the EMBA only.
Pilbara Crab Managed Fishery	✓	✓	✓	The Pilbara Crab Managed Fishery management area overlaps the PAA. The fishery operates via trap-based fishery methods up to 50 m depth, and is concentrated around Dampier. Blue swimmer crabs in the North Coast Bioregion (NCB) are targeted by the Pilbara Crab Managed Fishery (PCMF) using hourglass traps, primarily within inshore waters around Nickol Bay. The fishery is active within the 60NM CAES block overlapping the Export Trunkline Operational Area, in the nearshore area, reporting <3 vessels active during the 2017-2022 seasons (DPIRD, 2023). Woodside considers it a possibility that interactions with the fishery may occur within the Export Trunkline Operational Area and the EMBA.
Pilbara Fish Trawl (Interim) Managed Fishery	✓	✓	✓	The Pilbara Fish Trawl (Interim) Managed Fishery management area (Area 1) overlaps the PAA and the EMBA. The Offshore Facility Operational Area is located within the designated Pilbara offshore closed waters (trawl) (Zone 2 – Area 6). The Export Trunkline Operational Area overlaps the managed area for trawling, with up to four vessels active across the 2017–2023 seasons (DPIRD, 2023). Woodside considers it a possibility that interactions with the fishery may occur within the PAA and EMBA.
Pilbara Line Fishery (Condition)	✓	✓	✓	The Pilbara Line Fishery (Condition) licensees are permitted to operate anywhere within Pilbara waters (Wakefield *et al*., 2023), overlapping the PAA and the EMBA. The fishery is active in the PAA, with 60NM CAES blocks reporting up to 4 vessels active across the 2017-2023 seasons (DPIRD, 2023).

Fishery	Petroleum Activity Area		EMBA	Description
	Offshore Facility Operational Area	Export Trunkline Operational Area		Potential for interaction during Petroleum Activity Program ✗ no spatial overlap ✓ spatial overlap Blue shading indicates the possibility of interaction with the PAA
				Woodside considers it a possibility that interactions with the fishery may occur within the PAA and EMBA.
Pilbara Trap Managed Fishery	✓	✓	✓	The Pilbara Trap Managed Fishery management area overlaps the PAA. The fishery is active with 60MN CAES blocks reporting less than 3 vessels active across the 2017-2023 seasons (DPIRD, 2023). Woodside considers it a possibility that interactions with the fishery may occur within the PAA and EMBA.
South West Coast Salmon Managed Fishery	✓	✓	✓	The South West Coast Salmon Managed Fishery management area overlaps the PAA and EMBA. Historically, no fishing has occurred north of the Perth Metropolitan Area. Therefore, no effort is reported within the EMBA (Duffy *et al*., 2023). Woodside considers there to be no potential for interaction with this fishery within the EMBA.
Specimen Shell Managed Fishery	✓	✓	✓	The Specimen Shell Managed Fishery overlaps the PAA and the EMBA. The fishery is largely diver-based, targeting specimen shells in water depths mostly < 30m. FishCube data at 10NM CAES blocks overlapping the Export Trunkline Operational Area, report between 4 and 7 active licences over the last 5 years (DPIRD, 2023). Woodside considers it a possibility that interactions with the fishery may occur within the Export Trunkline Operational Area and EMBA.
Western Australian Abalone Managed Fishery	✓	✓	✓	The Abalone Fishery management area overlaps the PAA and EMBA. The fishery operates in shallow coastal waters off the south-west and south coasts of WA (Strain *et al*., 2023). Given the fishery method (shore-based and hand caught) and spatial limitations of the fishery, there are no CAES blocks reporting fishing effort within the EMBA. Woodside considers it only a possibility that interactions with the fishery may occur in the EMBA.
Western Australian North Coast Shark Fishery	✗	✗	✓	The North Coast Shark Fishing area overlaps the EMBA. The northern shark fisheries comprise of the North Coast Shark Fishery in the Pilbara and Western Kimberly (closed since 1998), and the Joint Authority of Northern Shark Fishery in the eastern Kimberly, which has not been active since 2008-2009 season (AFMA. 2021). Woodside considers it only a possibility that interactions with the fishery may occur in the EMBA.

Fishery	Petroleum Activity Area		EMBA	Description
	Offshore Facility Operational Area	Export Trunkline Operational Area		Potential for interaction during Petroleum Activity Program ✗ no spatial overlap ✓ spatial overlap Blue shading indicates the possibility of interaction with the PAA
Western Australian Sea Cucumber Fishery	✓	✓	✓	The Western Australian Sea cucumber Fishery management area overlaps the PAA and the EMBA. The fishery operates as a wader and diver-based fishery from Exmouth northwards to the Northern Territory. The fishery is active within the Export Trunkline Operational Area with 60NM CAES block reporting <3 vessels active over the last 5 years (2017-2022). Given the hand-catch methodology, limiting the fishery to shallower waters (<30m), Woodside considers it a possibility that interactions with the fishery may occur within the EMBA only.
West Coast Deep Sea Crustacean Managed Fishery	✓	✓	✓	The West Coast Deep Sea Crustacean Managed Fishery management area overlaps the PAA and EMBA, however the PAA are within the closed waters of the fishery. Woodside considers it a possibility that interactions with the fishery may only occur within the EMBA.
West Coast Rock Lobster Managed Fishery	✗	✗	✓	The Western Rock Lobster Fishery management area overlaps the EMBA. The fishery mainly operates off the west coast of WA between Shark Bay and Cape Leeuwin (de Lestang and Walsh, 2023). Woodside considers it a possibility that interactions with the fishery may only occur within the EMBA.
Charter-based Commercial Operators				
Tour Operators	✓	✓	✓	Fishing Tour Operators are permitted to operate across WA state waters and are required to report monthly logbook records of client fish catches. The fishery is active within PAA, with FishCube data indicating up to 7 licences reporting in the 60NM CAES blocks overlapping the PAA across the 2017-2023 seasons (DPIRD, 2023). Accordingly, Woodside considers there may be the potential for interaction with the Petroleum Activities Area and the fishery.

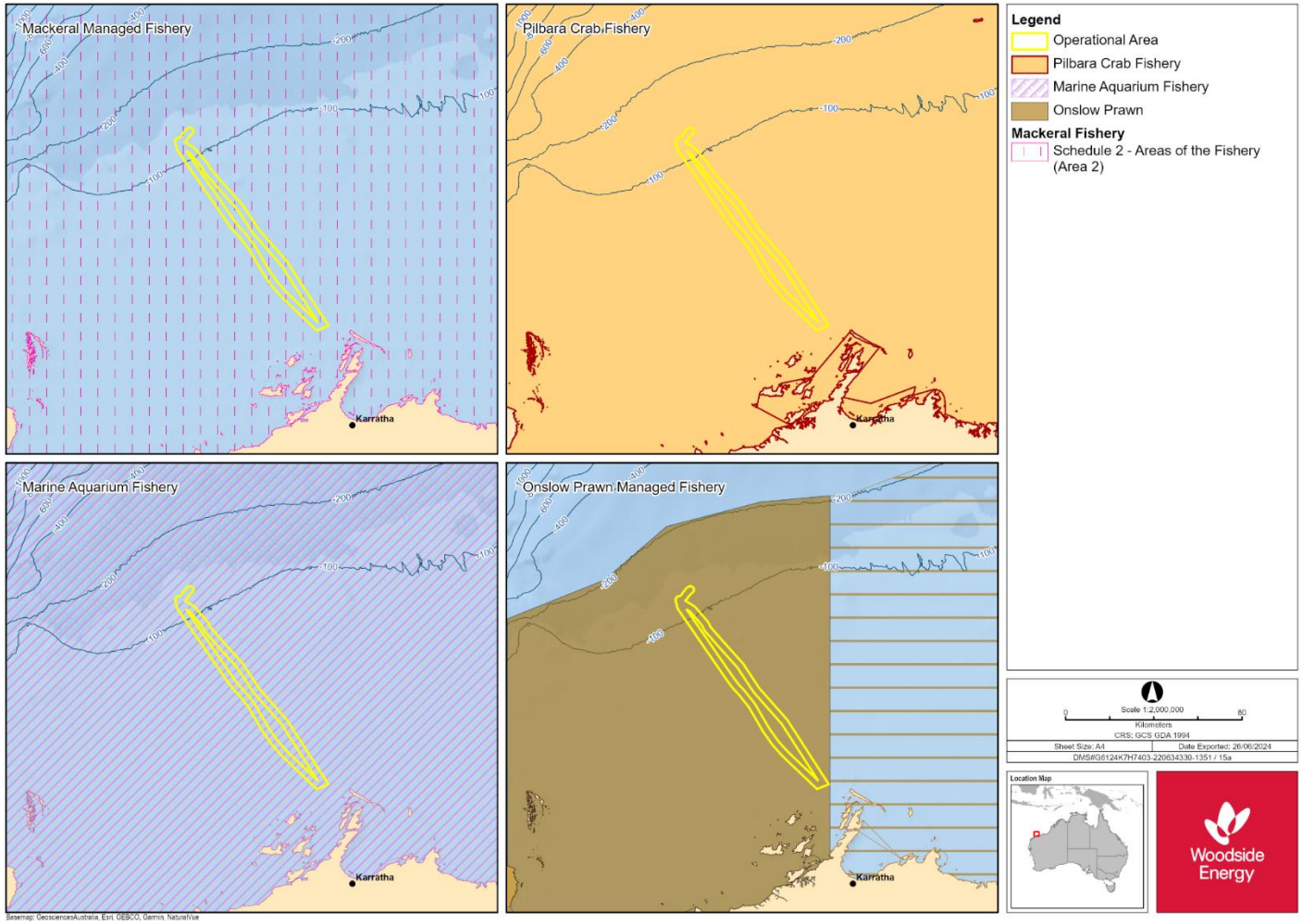


Figure 4-14: Commercial fisheries overlapping the PAA and EMBA with potential for interaction with the Petroleum Activities Program

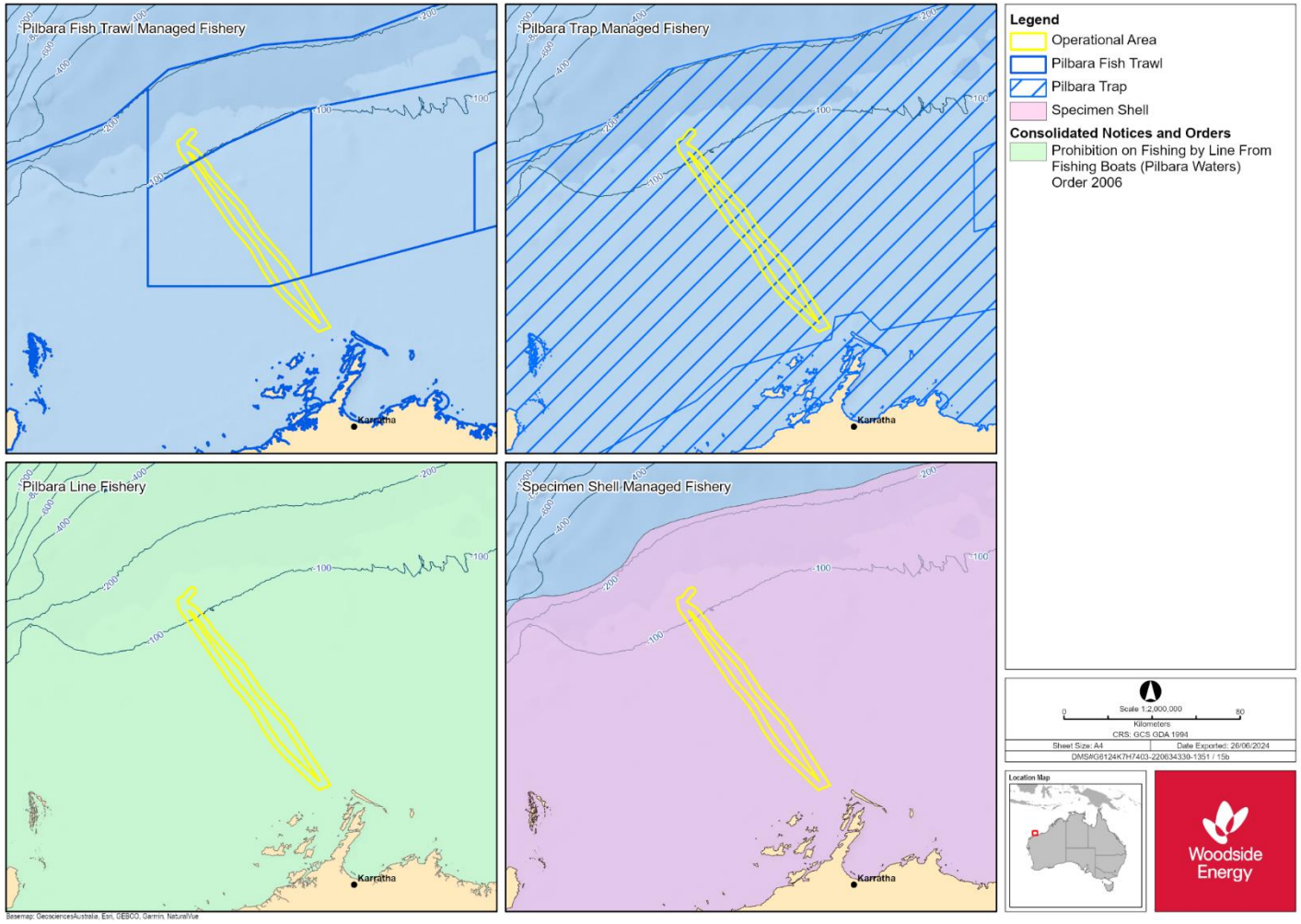


Figure 4-15 Commercial fisheries overlapping the PAA and EMBA with potential for interaction with the Petroleum Activities Program

4.10.2 Traditional Fisheries

There are no traditional or customary fisheries within the PAA, as these are typically restricted to shallow coastal waters and/or areas with seabed hard structures such as reefs. However, it is recognised that Barrow Island, Montebello Islands and Ningaloo Reef, all within the wider EMBA, have a known history of fishing when areas were occupied (as from historical records) (Department of Conservation and Land Management (CALM), 2005; Department of Environment and Conservation (DEC), 2007). Areas that are covered by registered native title claims are likely to practice Aboriginal fishing techniques at various sections of the Western Australia coastline. Traditional fisheries in the context of the wider North-west marine Region are described in **Appendix C-1.**

4.10.3 Tourism and Recreation

The recreation and tourism industries in the Pilbara are of high social value with approximately 965,000 visitors over the last five years (Tourism Western Australia, 2023). Tourism visitation continued to grow, with the number of visitors reaching over 1 million in 2022 (Tourism Western Australia, 2023). Visitation growth and the potential for further expansion in tourism and recreational activities are recognised for the Pilbara region (SGS Economics and Planning 2012).

The PAA is located offshore of the North West tourism region which includes parts of the Gascoyne and Pilbara regions. Tourism is concentrated in the vicinity of population centres such as Broome, Dampier, Exmouth, Coral Bay, and Shark Bay. The population centre closest to the PAA is the town of Dampier (50 km from the Export Trunkline Operational Area and 135 km from the Offshore Facility Operational Area). No tourist activities take place specifically within the PAA; however, it is acknowledged that tourism and recreational sectors in WA have expanded over the last couple of decades and are projected to continue to grow.

The Gascoyne and Pilbara regions are popular visitor destinations for Australian and international tourists. Recreational and tourism activities include charter fishing, diving, snorkelling, marine fauna watching, and yachting (DJTSI, 2022). Australia's North West had a 18% growth in intrastate spend in 2021-2022 financial year compared to 2019-2020. The state's highest intrastate spend on record occurred with WA residents spending $7.2 billion (DJTSI, 2022).

Tourism has the fourth largest economic output of all the major industries of the Gascoyne region (GDC, 2022). The main marine nature-based tourism activities are concentrated around and within the Ningaloo World Heritage Area (WHA) (approximately 268 km south-west of the PAA). In 2023, the region had over 307,000 overnight visitors with a total spend of $476 million between 2022 and 2023 (Tourism Western Australia, 2024). Activities undertaken include recreational fishing, snorkelling and scuba diving as well as wildlife watching and encounters (including whale sharks, manta rays, humpback whales and turtles) (Schianetz *et al*., 2009). The first Cultural Tourism was launched in 2022 on the Ningaloo Coast, departing from Coral Bay, and experiencing a unique perspective on the coastline's rich cultural heritage and environment (GDC, 2022).

Recreational fishing in 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 (~130 km south-east from the Offshore Facility Operational Area). Once at sea, charter vessels may also frequent the waters surrounding the Montebello Islands (Williamson *et al*., 2006). Some recreational fishing has historically taken place at Rankin Bank and the Glomar Shoals KEF (approximately 54 km south-west of the PAA, respectively).

Tourism and recreation in the context of the wider North-west marine Region are described in **Appendix C-1.**

4.10.4 Commercial Shipping

The Australian Maritime Safety Authority (AMSA) has introduced a network of marine fairways across the NWMR to reduce the risk of vessel collisions with offshore infrastructure. One shipping fairway crosses the Export Trunkline Operational Area (**Figure 4-16**). Vessel tracking data suggest shipping activity is concentrated to the east of the PAA.

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

- Barrow Island (~ 123 km south of the PAA);
- Dampier (~135 km south of the PAA); and
- Port Hedland (~204 km south-east of the PAA).

Shipping activities in the region may include:

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

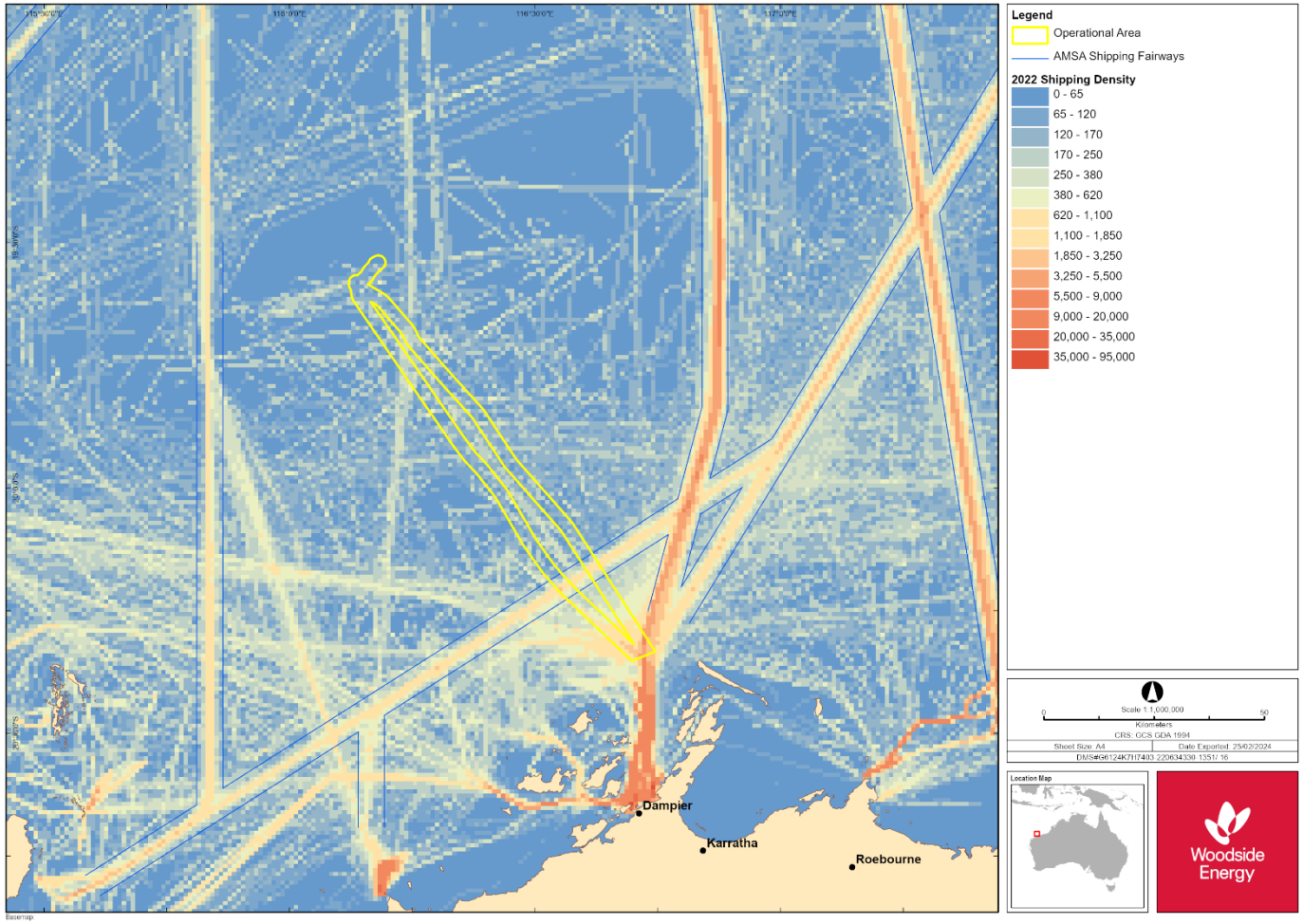


Figure 4-16: Vessel density map for the PAA and EMBA, derived from the Australian Maritime Safety Authority satellite tracking system data; vessels include cargo, liquefied natural gas tankers, passenger vessels, support vessels and others vessels

4.10.5 Oil and Gas

The PAA is located within an area of established oil and gas operations in the broader NWMR as outlined in **Table 4-26**. **Appendix C-1** describes current oil and gas development within the EMBA, also shown in **Figure 4-17**.

Table 4-25: Other oil and gas facilities located within 50 km of the PAA

Facility name and operator	Distance and direction from PAA to facilities (km)
Goodwyn Alpha platform (Woodside)	21 km west (PAA)
Okha FPSO (Woodside)	33 km east (PAA)
Angel platform (Woodside)	42 km east (PAA)
Reindeer wellhead platform (Santos)	9 km west (Export Trunkline Operational Area) 50 km south (Offshore Facility Operational Area)
Stag A (Jadestone)	28 km west (Export Trunkline Operational Area) 78 km south (Offshore Facility Operational Area)
Wandoo A and B (VOGA)	4-6 km west (Export Trunkline Operational Area) 66-67 km south (Offshore Facility Operational Area)

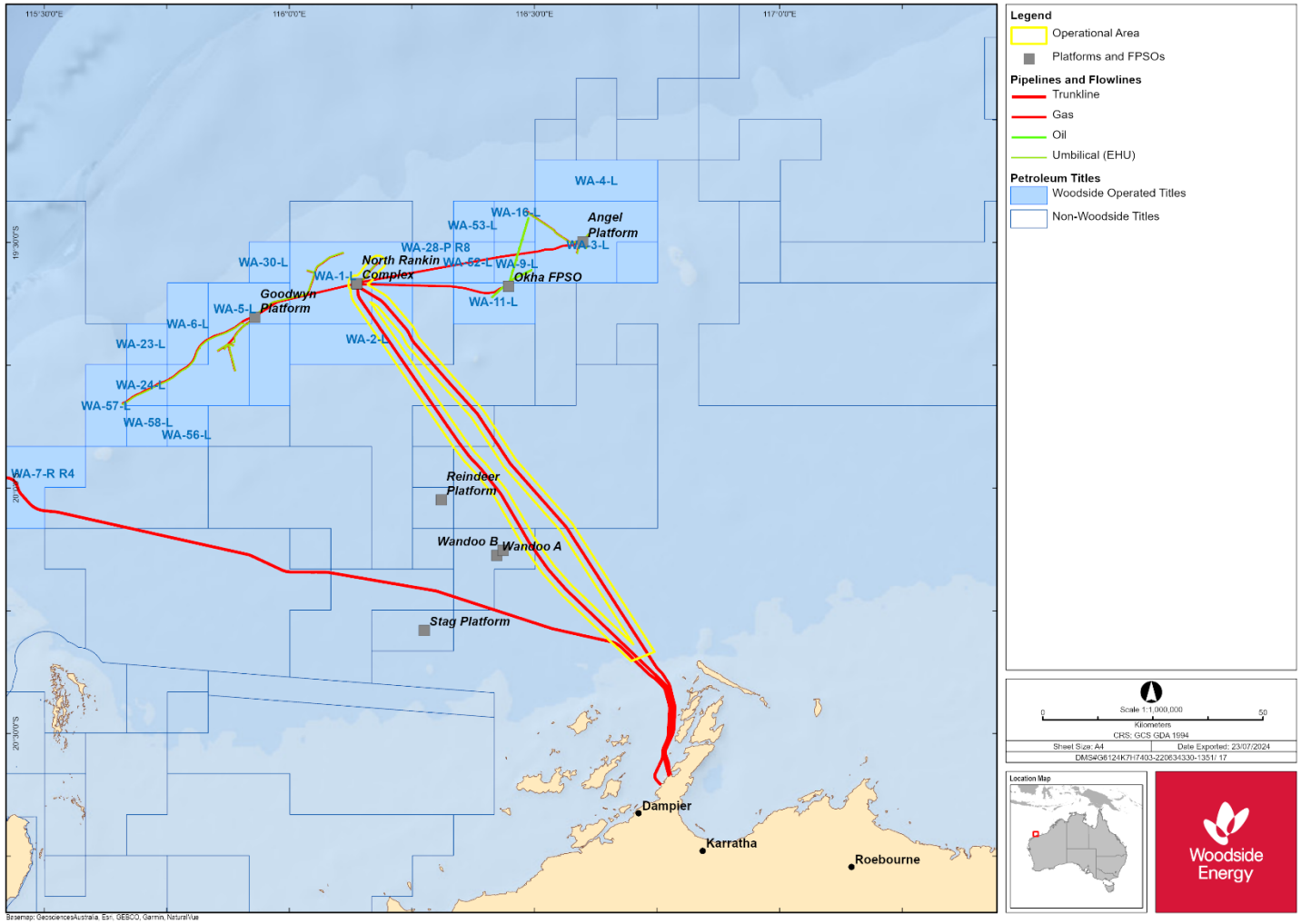


Figure 4-17: Oil and gas infrastructure within the EMBA

4.10.6 Defence

Department of Defence (DoD) areas, facilities, and unexploded ordnance (UXO) near the PAA and within the EMBA are outlined in **Table 4-26** and presented in **Figure 4-18.** There are no defence areas overlapping the PAA. **Appendix C-1** describes the key DoD operational areas and facilities in the NWMR.

Table 4-26: Defence areas, facilities and UXO overlapping the PAA or EMBA.

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

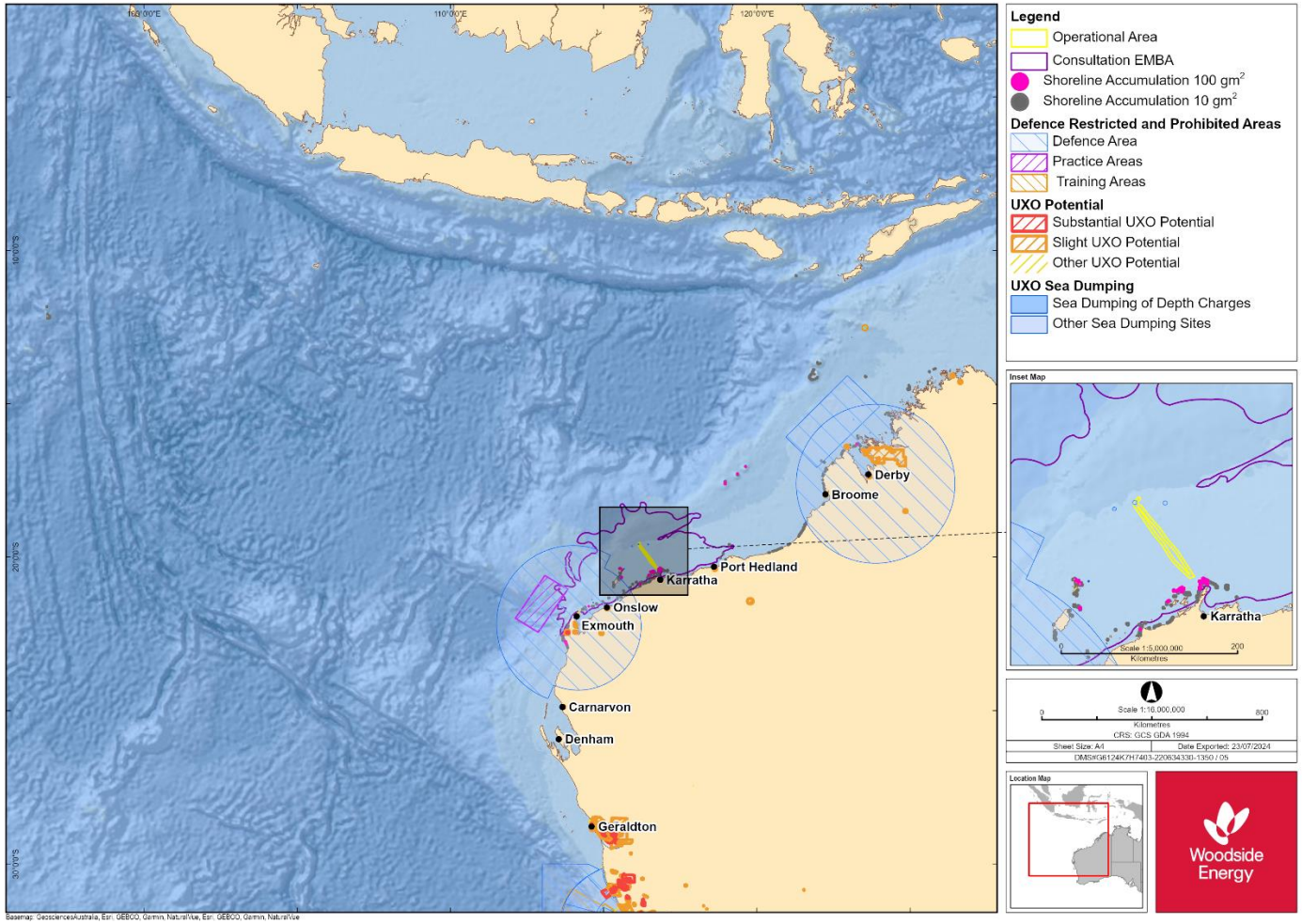


Figure 4-18: Defence areas relative to the PAA and EMBA

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. (In this Section, references to 'regulations' are to regulations of the Environment Regulations, unless otherwise stated).

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 or 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 *Munkara v Santos NA Barossa Pty Ltd (No 3)* [2024] FCA 9 (Munkara Case).

For this EP, Woodside has considered both the PAA 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 the activities in the PAA (see **Section 4**).

Woodside's consultation methodology is divided into two parts:

- The first section (**Section 5.2** to **5.5**) provides an overview of Woodside's consultation methodology for its EPs, including how we apply regulation 25(1) to identify relevant persons.
- The second section (**Section 5.6** to **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(1)
- opportunities provided to persons or organisations to participate in consultation.

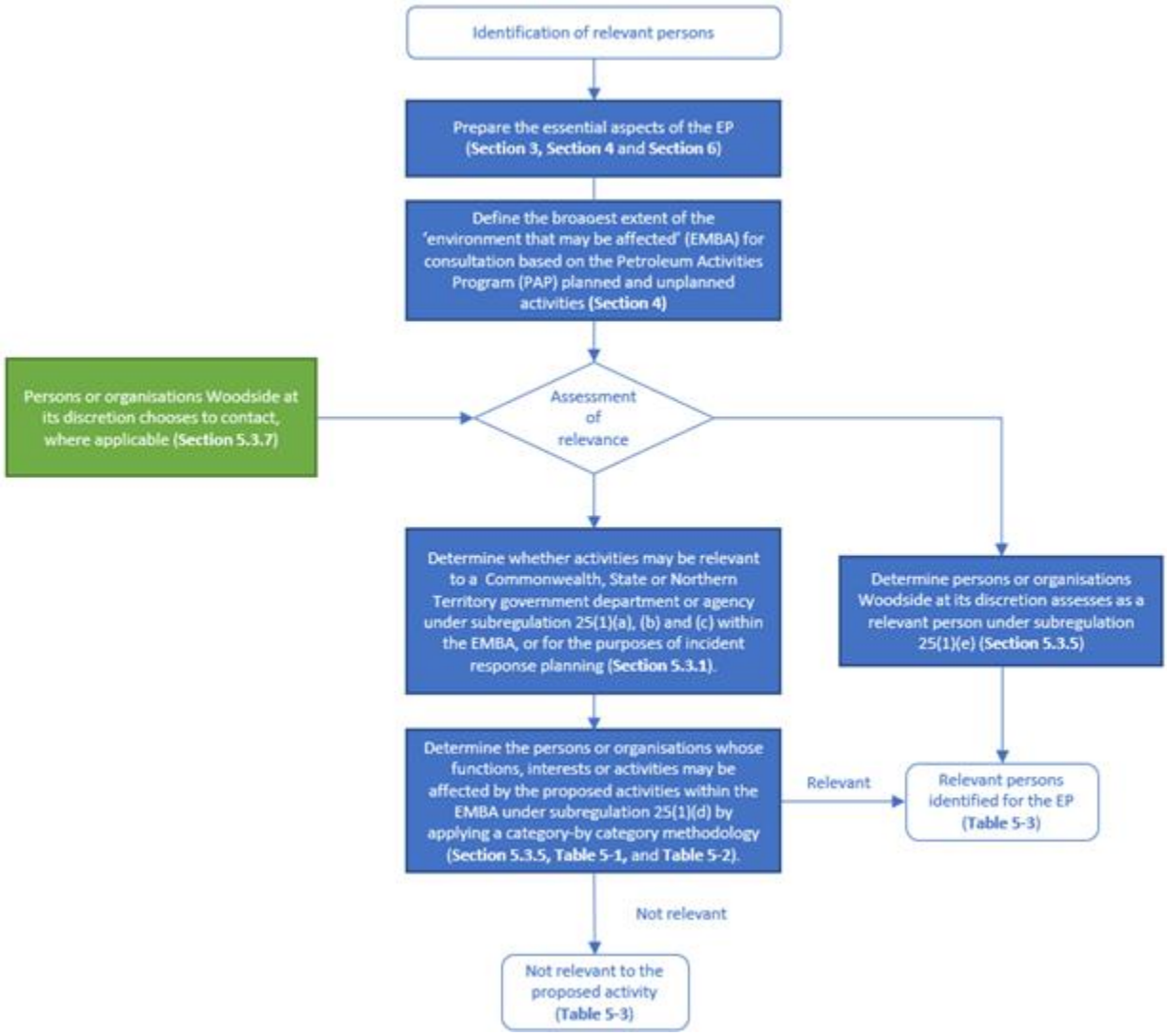


Figure 5-1: Overview of Woodside's methodology to identify relevant persons

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 Petroleum Activities Program. The information in the consultation list has been captured from years of experience: it contains insights relating to the type of information particular persons or organisations want to receive during consultation, the appropriate method of consultation for relevant persons and includes appropriate contact details, which are reviewed and updated periodically.

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) (**Section 5.5.1**). This methodology is consistent with NOPSEMA's guideline and demonstrates that, to meet the requirements of regulation 34 (criteria for EP acceptance) when preparing the EP, Woodside understands:

- our planned activities in the Operational Area, being the area in which our planned activities are proposed to occur (see **Section 3.2**)
- the geographical extent to which the environment may be affected (EMBA) by risks and impacts from our activities (unplanned) (identified in **Section 4.1** and assessed in **Section 6.8**).

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

- consult with each of the following (a relevant person) in the course of preparing an environment plan:
    - each Commonwealth, State or Northern Territory agency or authority to which the activities to be carried out under the EP may be relevant
    - if the plan relates to activities in the offshore area of a State – the Department of the responsible State Minister
    - if the plan relates to activities in the Principal Northern Territory offshore area – the Department of the responsible Northern Territory Minister
    - a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP
    - any other person or organisation that the titleholder considers relevant (regulation 25(1)).

- give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on their functions, interests or activities (regulation 25(2))
- allow a relevant person a reasonable period for the consultation (regulation 25(3))
- tell each relevant person that the titleholder consults with that the relevant person may request that particular information it provides in the consultation not be published and any information subject to such a request is not to be published (regulation 25(4)).

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

- is consistent with the principles of ecologically sustainable development (ESD) set out in section 3A of the EPBC Act – see Section 2
- is intended to reduce the environmental impacts and risks from the activity to ALARP and an acceptable level (regulation 4)
- is intended to minimise harm to the relevant person and the environment from the proposed petroleum activities and to enable Woodside to consider measures that may be taken to mitigate the potential adverse environmental impacts from the petroleum activity is collaborative. Woodside respects that for a relevant person, consultation is voluntary. Where the relevant person seeks to engage, Woodside engages with the relevant person with the aim of seeking genuine and meaningful two-way dialogue
- provides opportunities for relevant persons to provide feedback throughout the life of the EP through its ongoing consultation process (refer to **Section 5.7** and **Section 7.10**).

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

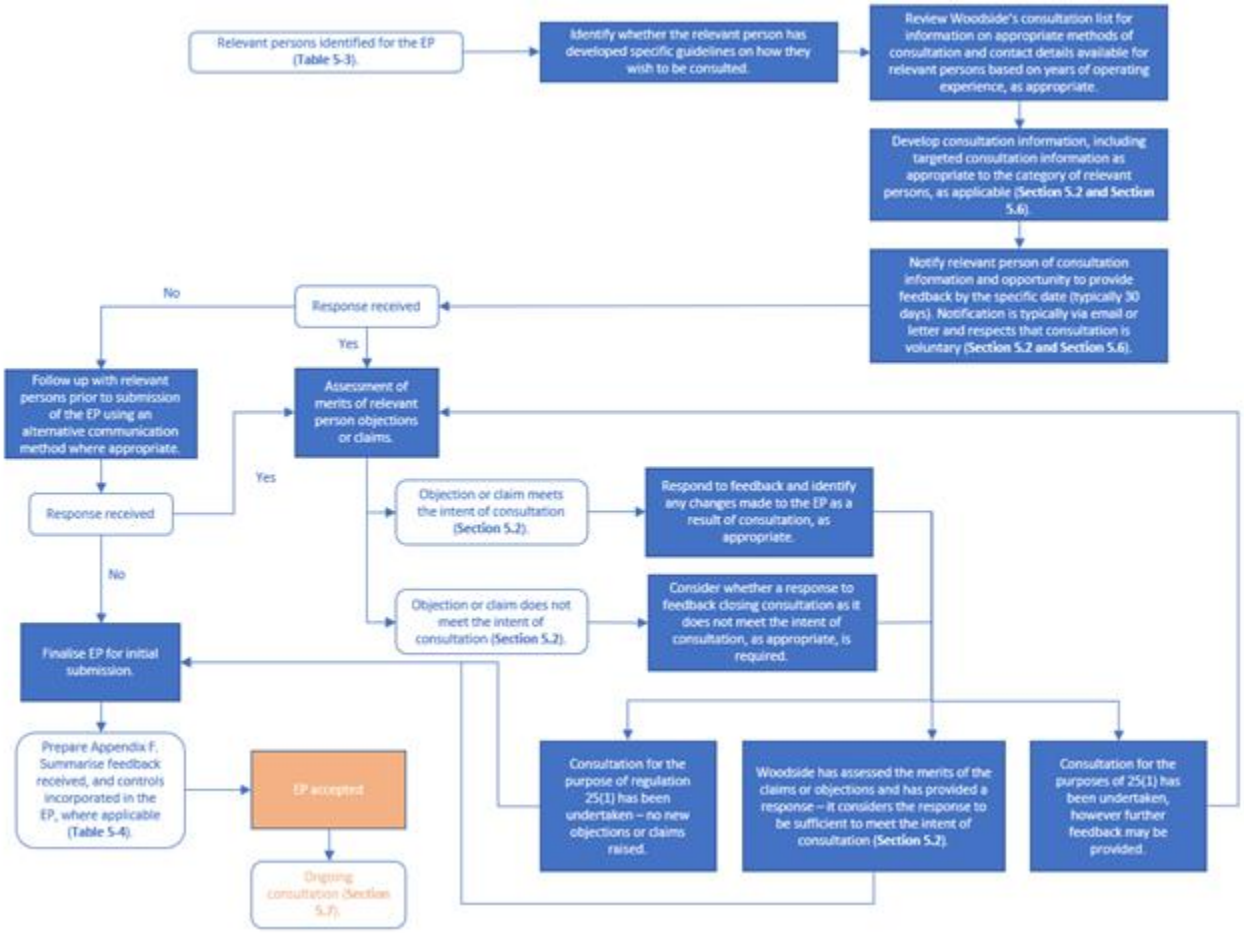


Figure 5-2: Overview of Woodside's consultation approach

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

Federal Court:

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

NOPSEMA:

- GL2086 – Consultation in the course of preparing an environment plan – May 2023
- GN1847 – Responding to public comment on environment plans – January 2024
- 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 Energy, Mines, Industry Regulation and Safety (DEMIRS):
  - Draft Policy and Guideline — Decommissioning of petroleum and geothermal energy property, equipment and infrastructure in Western Australian onshore areas and State coastal waters (March 2024)
- Department of Climate Change, Energy, the Environment and Water (DCCEEW):
  - Sea Countries of the North-West; Literature review on Indigenous connection to and uses of the North West Marine Region

Australian Fisheries Management Authority (AFMA):

- Petroleum industry consultation with the commercial fishing industry

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

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

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

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

WA Department of Transport (DoT):

- Offshore Petroleum Industry Guidance Note

WA Australian Fishing Industry Council (WAFIC):

- Oil and Gas Consultation Framework

Good practice consultation:

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

5.3 Identification of Relevant Persons for Consultation

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

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

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

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

- Woodside considers the defined responsibilities of each of the departments and agencies to which the activities to be carried out in the EMBA under the EP may be relevant. This list of relevant 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 2024), which describes where the Department is a relevant agency under the Environment Regulations, as well as experience and knowledge that Woodside has gained from years of operating . This list is revised from time to time, for example, for the purposes of accommodating government restructures, renaming of departments, shifting portfolios and/or to account for new agencies that might arise.
- Woodside has categorised government department or agency groups as follows:
  - **Government departments/agencies** – marine: Agencies with legislated responsibilities for use of the marine environment
  - **Government departments/agencies** – environment: Agencies with legislated responsibilities for the protection of the marine environment
  - **Government departments/agencies** – industry: The legislated Department of the responsible Commonwealth, State or Northern Territory Minister for Industry.
- Woodside considers each of the responsibilities of the departments and agencies; determining whether those responsibilities overlap with potential risks and impacts specific to the 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 does not consult with departments or agencies with interests that do not overlap with risks and impacts specific to the proposed petroleum activity in the EMBA or would not be involved in incident response planning.

5.3.3 Regulation 25(1)(d)

To identify a relevant person for the purposes of regulation 25(1)(d), the meaning of "functions, interests or activities" needs to be understood. In regulation 25(1)(d), the phrase "functions, interests

or activities" should be construed broadly and consistently with the objects of the Environment Regulations (regulation 4) and the objects of the EPBC Act (section 3A).

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

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

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

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

On the topic of consulting outside of Australia's jurisdiction, when assessing potential impacts from planned and unplanned activities for this EP, it was determined there was an extremely low probability of an unplanned hydrocarbon release entering international waters (Section 8.2.3.2), specifically Indonesian waters. Consideration has been given to the functions, interests or activities that may be affected by the activities to be carried out, should a worst-case scenario eventuate, noting that modelling completed to predict the extent of potential impact is based on there being no mitigative controls in place. The more realistic scenario is that appropriate mitigation controls set out in Woodside's Oil Spill Preparedness and Response Mitigation Assessment and Oil Pollution First Strike Plans would be in place or will be implemented.

The obligation to consult must be construed in a practical and pragmatic way that makes this process reasonable and workable, and capable of being discharged within a reasonable time. The obligation to identify relevant persons for the purpose of consultation must be capable of practicable and reasonable discharge. The Regulations require relevant persons, and their interests, to be readily ascertainable to the titleholder. In the case of Indonesia, which comprises extensive coastlines and potentially remote communities, Woodside considers potential relevant persons within these communities are not readily ascertainable, for reasons including that there are limited electronic records and public records which allow for the identification of potential functions, interests or activities e.g. fisheries, tourism licences and permits.

For example, there are no known licencing requirements either in Australia or in Indonesia for traditional Indonesian fishers, therefore, no publicly available information to identify and make contact with persons for consultation purposes. The logistics of access to these fishers, the nature of their activities and distance and remoteness from the OA of this activity of over 1300 kilometres makes international consultation impractical to discharge from a reasonable time and efforts perspective.

Given the extremely low probability of potential impacts, the difficulty of identifying international individuals, and the impracticality of engaging where feedback on unplanned impacts is highly unlikely to inform proposed activities, consultation with international individuals is not required for the activities described in this EP.

Having regard to nature and scale and given the extremely low probability of potential impacts (which are the highly unlikely occurrence of spill traversing international waters), the current processes in place with Department of Foreign Affairs and Trade (DFAT) and the processes and consultation triggers set out in the Woodside's Oil Spill Preparedness and Response Mitigation Assessment and Oil Pollution First Strike Plans provide a mechanism for consultation in international waters that will be complied with at the appropriate time, if an incident occurs. In such circumstances, consultation with the DFAT discharges the requirement for consultation with international persons.

Woodside will continue to consult the DFAT for proposed activities outside of Australia's jurisdiction including in the event of a hydrocarbon spill that is likely to traverse international waters as described in the Oil Pollution Emergency Plan – Appendix D of this EP. The process for working with DFAT to manage activities and consultation in the highly unlikely event of a hydrocarbon spill that may traverse international waters is described in the Oil Pollution Emergency Plan – Appendix D of this EP.

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

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

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

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

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

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

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

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

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

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

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

Table 5-1: Categories of Relevant Persons

Category	Explanation
Commercial fisheries (Commonwealth and State) and peak representative bodies	Commonwealth or State Commercial Fishery with a fishery management plan recognised under the *Commonwealth Fisheries Management Act 1991 (Cth)* and the *Western Australian Fish Resources Management Act 1994 (WA)*, which may be amended from time to time. Commonwealth peak fishery representative bodies are identified by AFMA. WAFIC is the peak representative body for state fishers in Western Australia.
Recreational marine users and peak representative bodies	Charter boat, tourism and dive operators identified by DPIRD specific to the location of the proposed activity. Representative bodies are the recognised peak organisation(s) for recreational marine users.
Titleholders and Operators	Registered holder of an offshore petroleum title or GHG title under the OPGGS Act and associated regulations.
Peak industry representative bodies	Recognised peak organisation(s) for the oil and gas sector.
Traditional Custodians (individuals and/or groups/entity)	Traditional Custodians are First Nations Australians with cultural rights and interests, or cultural functions or who perform cultural activities over particular lands and waters. Where a First Nations person, group or entity self-identifies and asserts cultural rights, functions, interests or activities they will be considered under the definition of Traditional Custodian for the purpose of this EP (as appropriate).
Nominated Representative Corporations	Nominated representative corporations are Traditional Custodians' nominated representative institutions such as Prescribed Body Corporates (PBCs). PBCs are established under the Native Title Act 1993 (Cth) by Traditional Custodians to represent their entire Traditional Custodian group (defined broadly by reference to descents from an ancestor set who were known to be the Traditional Custodians at the time of European colonisation) and their interests including, among other things, management and protection of cultural values.
Native Title Representative Bodies	A Representative Aboriginal/Torres Strait Islander Body (RATSIB) is a regional organisation appointed under the *Native Title Act 1993* with prescribed functions, set out in Part 11 of the *Native Title Act 1993*, which relate to: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies.
Historical heritage groups or organisations	Legislated or government enlisted groups or organisations responsible for the management of marine heritage.
Local government and elected Parliamentary representatives and recognised local community reference/liaison groups or organisations	Local government body formed under the *Local Government Act 1995 (WA)* and elected Parliamentary representatives which are responsible for representing the local community. Recognised local community reference/ or liaison group or organisation in relation to oil and gas matters.
Other non-government groups, organisations or individuals	Non-government organisation with public website material targeting the proposed activity. Individual who demonstrates the proposed activity could potentially impact their interests, functions or activities.

Category	Explanation
Research institutes and local conservation groups or organisations	Research institutes are government or private institutions that conduct marine or terrestrial research. Local conservation groups are local non-government organisation that regularly conduct conservation activities focused on the local environment or wildlife.

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

Category	Relevant person identification methodology
Commercial fisheries (Commonwealth and State) and peak representative bodies	Woodside assesses relevance for commercial fisheries (Commonwealth and State) and their representative bodies using the following next steps in its methodology: • Defining the parameters having regard to timing, location and duration of the proposed petroleum activity. • Confirming whether the EMBA overlaps with the fisheries management area (i.e., the spatial area the fishery is legally permitted to fish in) (see **Section 4.10**). Woodside acknowledges WAFIC's consultation guidance , that Titleholders develop separate consultation strategies for significant unplanned events (for example an oil spill) where Titleholders can demonstrate the likelihood of such events occurring is extremely low. WAFIC's guidance is that consultation on unplanned events resulting in an emergency scenario should only be undertaken if an incident occurs (see **Appendix D**). 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 PAA and EMBA (see **Section 4.10**). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the PAA or EMBA (see **Section 4.10**) 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 PAA – 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 PAA or EMBA (see **Section 4.10**) 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:

Category	Relevant person identification methodology
	• Using Woodside knowledge and operating experience, applying knowledge of recreational marine users in the area. This assessment is both activity and location based. • Defining the parameters having regard to timing, location and duration of the proposed petroleum activity. • Assessing the potential spatial and temporal extent for interaction with recreational marine users by reviewing DPIRD FishCube data to assess whether there has been activity within the EMBA in the past 5 years. Assessment of relevance: • Recreational marine users that have been active in the past 5 years within the EMBA are assessed as relevant to the proposed activity. Woodside is provided with the contact details of charter, boat tourism and dive operators specific to the region of the EMBA by DPIRD to consult with the relevant persons. • If Woodside has identified recreational marine users as relevant persons, then Woodside also consults identified peak recreational marine user representative bodies. For example, Recfishwest represents the interests of recreational fishers. These representative bodies are identified via Woodside's existing consultation list, which is updated as appropriate via advice from known groups and DPIRD.
Titleholders and Operators	Woodside assesses relevance for other Titleholders and operators using the following steps in its methodology: • Using 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. • Websites 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

Category	Relevant person identification methodology
	• 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/or individuals. Further detail to Woodside's methodology is as follows. Woodside uses the databases of the National Native Title Tribunal to understand: • whether there are any Native Title Claims (historical or current) or determinations overlapping or coastally adjacent to the EMBA • to understand whether there are any relevant Indigenous Land Use Agreements (ILUAs), registered with the National Native Title Tribunal that overlap or are adjacent to the EMBA that may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. Where there is a positive determination of native title, contacting the PBC or, where their representative is a Native Title Representative Body, contacting the Native Title Representative Body. Where appropriate, contacting the relevant Native Title Representative Body to request a list of any First Nations groups asserting Traditional Custodianship over an area of coastline adjacent to the EMBA. Review of Commonwealth and State Marine Park Management Plans that overlap the EMBA which may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. 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, interest 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:

Category	Relevant person identification methodology
	• A Representative Aboriginal/Torres Strait Islander Body (RATSIB)is a regional organisation appointed under the *Native Title Act 1993* with prescribed functions set out in Part 11 of the *Native Title Act 1993*, which relate to: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies. • Review of National Native Title Tribunal RATSIB areas that overlap or are coastally adjacent to the EMBA. Assessment of relevance: • Where the area for which a Native Title Representative Body is recognised under the *Native Title Act 1993* overlaps with the EMBA or is coastally adjacent to the EMBA, Woodside will assess the Native Title Representative Body as relevant.
Historical heritage groups or organisations	Woodside assesses relevance for groups or organisations whose responsibilities are focused on historical heritage using the following steps in its methodology: • Using the Australasian Underwater Cultural Heritage Database to assess known records Maritime Cultural Heritage sites (shipwrecks, aircraft and relics) within the EMBA (see **Section 4.9**). Assessment of relevance: • Where there is a known underwater heritage site (shipwrecks, aircraft and relics) within the EMBA, the relevant group or organisation that manages the site will be assessed as relevant.
Local government and recognised local community reference/liaison groups or organisations	Woodside assesses relevance for local government and recognised local community reference/liaison groups or organisations using the following steps in its methodology: • Review of Woodside maps (developed based on data from the WA Local Government, Sport and Cultural Industries My Council database and WA Local Government Association (WALGA) Local Government Directory maps) to assess overlap between the local government's defined area of responsibility and the EMBA. • Woodside hosts regular community reference/liaison group meetings. Members represent a cross-section of the community and local towns interests. Representatives are from community and industry and generally include, Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, Community and industry organisations. Woodside considers these reference/liaison groups to be the appropriate recognised representatives of the local community for the oil and gas sector. • Woodside reviews the community reference/liaison group's terms of reference to determine its area of responsibility and overlap with the EMBA. For example, the Exmouth Community Liaison Group's area of responsibility in relation to Woodside's operational, development and planning activities, is defined in the terms of reference as the Exmouth sub-basin. Comparatively, the Karratha Community Liaison Group's area of responsibility is the Pilbara region (i.e., onshore). Assessment of relevance: • The local government whose defined area of responsibility overlaps the EMBA is assessed as relevant. • The community reference/liaison group whose defined area of responsibility overlaps the EMBA is assessed as relevant and consulted collectively via the relevant reference/liaison group.
Other non-government groups, organisations or individuals	Woodside assesses relevance for other non-government groups, organisations or individuals using the following steps in its methodology:

Category	Relevant person identification 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), Woodside has discretion to categorise any other person or organisation as a relevant person under regulation 25(1)(e).

5.3.6 Identification of Relevant Persons Under Regulation 25(1)(e)

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

5.3.7 Persons or organisations Woodside chooses to contact

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

- that are 'not relevant' pursuant to regulation 25(1) but that Woodside has chosen to seek additional guidance from, for example, to inform the correct contact person that Woodside should consult, or engage with;
- that are 'not relevant' pursuant to regulation 25(1) but have been contacted as a result of consultation requirements changing or updated guidance from the regulator; 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 **1** and **Section 5.3**). The result of Woodside's assessment of relevance during the development of the EP is outlined in **Appendix F** Table 1.

5.3.8 Assessment of Relevant Persons for the Proposed Activity

The result of Woodside's assessment of relevant persons in accordance with regulation 25(1) is outlined in **Appendix F** Table 1 and **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 in **Appendix F** Table 1 and 3.

5.4 Consultation Material and Timing

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

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

- a summary of relevant risks and mitigation and management control measures relevant to the proposed petroleum activity (PPA).

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 PAA, as a result of temporary displacement due to exclusion zones, may require more targeted information relevant to their functions, interests or activities. Sufficient information may have been provided to a relevant person even where all documents requested by a relevant person have not been provided. Woodside acknowledges NOPSEMA's brochure entitled 'Consultation on offshore petroleum environment plans information for the community', which advises persons being consulted that they may inform titleholders that they only want to be consulted in the very unlikely event of an oil spill.

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

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

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

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

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

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

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

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

Category of relevant person	Typically accepted form of communication
Government departments/ agencies – marine	Woodside applies NOPSEMA's guideline for engagement with Commonwealth government departments or agencies GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023by using email for its consultation unless another form of communication is requested. Other forms of communication, such as phone calls, meetings and/or presentation briefings are used on request.
Government departments/ agencies – environment	
Government departments/ agencies – industry	
Commercial fisheries and peak representative bodies	Commonwealth commercial fisheries: Email is used as the primary form of communication with Commonwealth commercial fisheries in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request. State commercial fisheries and recreational marine users: The Western Australian Department of Primary Industries and Regional Development (DPIRD) has responsibility for managing the Fish Resources Management Act 1994 and Aquatic Resources Management Act 2016, which limits the provision of contact details from the register to the name and business address of licence holders. Alternative forms of communication are at the licence holder's discretion. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request. Peak representative bodies: Email is used as the primary form of communication with commercial fishery and recreational marine user peak representative bodies in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Recreational marine users and peak representative bodies	
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.

Category of relevant person	Typically accepted form of communication
Native Title Representative Bodies	There are many forms of communication that Woodside uses on a case-by-case basis and as appropriate to or requested by the specific group, such as email, phone calls, meetings and community forums. Other forms of communication are used on request.
Historical heritage groups or organisations	NOPSEMA's guideline (GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023) for engagement with government departments or agencies is used as a reference for Woodside's approach for communicating with historical heritage groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Local government and recognised local community reference/liaison groups or organisations	Local government: NOPSEMA's guideline (GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023) for engagement with local government is used as a reference for Woodside's approach for communicating with historical heritage groups or organisations. Community reference/liaison groups and chambers of commerce: Email and presentations are used as the primary form of communication with local community reference/liaison groups or organisations in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Other non-government groups or organisations	Email is used as the primary form of communication with Other non-government groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Research Institutes and Local conservation groups or organisations	Email is used as the primary form of communication with research institutes and local conservation groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.

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

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

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

5.4.2 Reasonable Period for Consultation

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

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

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

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

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

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

"it must be taken to be the regulatory intention that the consultation requirement cannot be one that is incapable of being complied with within a reasonable time..."[10]

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

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

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

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

[10] Santos NA Barossa Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [136].

Woodside considers that consultation for this EP has closed.

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

5.4.3 Discharge of Regulation 25

The Full Federal Court made clear in the *Tipakalippa Appeal* that consultation should be approached in a "reasonable", "pragmatic" and "not so literal" way, so that consultation obligations were capable of being met by titleholders (**Section 5.5.1**) [11]. Consultation is a "real world activity" and must be capable of reasonable discharge. [12]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.[13]

When the titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, then regulation 25 consultation requirements are met. [14] 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 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.[15]

While a titleholder is required to provide an opportunity to consult, the titleholder is not required to obtain consent to engage in the activity from a person being consulted, or confirmation from a person being consulted, that consultation is complete. The Federal Court has commented that a "*reasonable opportunity*" for consultation must be afforded to relevant persons.[16] A reasonable opportunity may not be every opportunity requested and is limited to reasonable opportunities to consultWoodside has completed steps required to discharge its consultation obligations. Woodside has provided sufficient information and a reasonable period of time to enable relevant persons to make an informed assessment of the possible consequences of the activity on their functions, interests or activities; and sufficient time to provide relevant feedback for Woodside to assess relevant persons' objections or claims. Woodside has also provided a reasonable opportunity for there to be genuine two-way dialogue on a person's claims or objections.

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

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

[11] Santos NA Barossa Ltd v Tipakalippa [2022] FCAFC 193 [89], [98], [103] – [104] and [109].

[12] Santos NA Barossa Ltd v Tipakalippa [2022] FCAFC 193 [89].

[13] Santos NA Barossa Ltd v Tipakalippa [2022] FCAFC 193 [96] and [103].

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

[15] 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].

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

5.5 Context of Consultation Approach with First Nations

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

5.5.1 Approach to Methodology – Woodside's Interpretation of Tipakalippa Appeal

Woodside has implemented a consultation methodology consistent with regulation 25 and guidance provided in the *Tipakalippa Appeal* (**Section 5.2**). Woodside's consultation methodology allows for a sufficiently broad capture of Traditional Custodian relevant persons, provides for informed consultation, follows cultural protocols and allows a reasonable opportunity for consultation with Traditional Custodians whose functions, interests and activities may be affected by the activity described in this EP (**Section 5.5.2.1** to **5.5.2.4**).

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

"It can be seen that the terms of [the native title legislation] are somewhat absolute – "all". However, [the native title legislation] has consistently been construed in a way that is not so literal … The cases concerning [the native title legislation] … have reiterated … that [the native title legislation] does not require that "all" of the members of the relevant claim group be involved in the decision. The key question will be whether a reasonable opportunity to participate in the decision-making process has been afforded by the notice for a relevant meeting."[18]

"We consider the authorities in relation to processes under the NTA to be illustrative of how a seemingly rigid statutory obligation to consult persons holding a communal interest may operate in a workable manner" (emphasis added).[19]

"there is no definition of what constitutes "consultation for the purpose of Reg 11A [now Regulation 25]... A titleholder will need to "demonstrate" to NOPSEMA that what it did constituted consultation appropriate and adapted to the nature of the interests of the relevant persons" [20] (emphasis added).

The Judgment in the *Tipakalippa Appeal* makes it clear that a Titleholder will have some decisional choice in identifying which person(s) are to be approached, how the information will be given to allow the "relevant person" to assess the possible consequence of the proposed activities on their functions, interests or activities, and how the requisite consultation is undertaken. [21] 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**).

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

[18] Santos NA Barossa Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [98].

[19] Santos NA Barossa Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [96].

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

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

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

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

5.5.2 Consultation Method

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

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

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.[22] 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

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

our activities, to self-identify**,** 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;
- From the commencement of engagement with Traditional Custodians, Woodside seeks direction on how they prefer to be consulted and has consulted accordingly. Consultation processes that are informed by Traditional Custodians and co-designed on a case-by-case basis and includes their direction as to cultural protocols, structure of consultation and who to appropriately consult with (such as elders);
- Holding meetings on country at a place and time agreed with Traditional Custodians and offering and providing financial assistance for meeting expenses (as appropriate); and
- 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"[23]. 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[24]. 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.

5.5.2.1 Identification of Relevant Persons

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

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

Woodside asks nominated representative corporations (such as PBCs) and Native Title Representative Bodies to identify individuals that should be consulted, and enables individuals to self-identify in response to national and local advertising, social media and community engagement opportunities (**Section 5.5.2.4**). 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 5.5.2.4** below, individuals are also given the opportunity to self-identify, consult and provide their own feedback on the proposed activity. When approached in this way, Woodside will engage individuals as relevant persons and will also (subject to any confidentiality or cultural restrictions) advise the nominated representative body of the consultation where it relates to cultural values. These methods of consultation are consistent with requirements for notification under the *Native Title Act 1993 (Cth)*, such as under the future act provisions (section 29), which requires notification of the Native Title Representative Body, the PBC (or nominated representative) and notification through newspapers. The notification process has been selected as a respectful, practical and pragmatic analogue for consultation with First Nations peoples, rather than requiring members to be notified via a formal authorisation process which seeks, from members, authorisation of agreements and native title/compensation claims under the *Native Title Act 1993(Cth)* [25].

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

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

[25] Santos NA Barossa Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [104].

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.

5.5.2.2 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 5.5.2.1**). 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 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 Environment Plan consultation, this approach is considered inappropriate by modern Indigenous engagement standards, fundamentally undermining the authority of the authorised representative entity and can be detrimental to the relationship.

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

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

Where face-to-face consultation meetings are requested, Woodside coordinates engagement at the Traditional Custodians location of choice (where practicable) and with their nominated attendees. Key project 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.

5.5.2.4 Reasonable Period for Consultation

Woodside seeks to consult in order to support preparation of its Environment Plan. 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**).

5.5.2.5 Discharge of Regulation 25

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

In relation to Traditional Custodian relevant persons (and all relevant persons), Woodside has discharged its duty under regulation 25. Woodside considers that consultation under regulation 25 is complete (**Section 5.4.3**).

5.6 Providing Feedback and Assessment of Merit of Objections or Claims

There are a number of ways in which feedback can be provided. Feedback can be provided through the Woodside feedback email or via the Woodside feedback toll free phone line as outlined in the

Consultation Information Sheet and the Woodside website. Where appropriate, consultation may also be supported by phone calls or meetings. An environment plan feedback form is also available on Woodside's website enabling stakeholders to provide feedback on proposed activities, or to request additional information.

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

Woodside accepts feedback and engages in consultation in order to achieve the aims set out in **Section 5.2**. Woodside recognises that there are persons and organisations that take a view that Woodside's operations and/or growth projects should be stopped or at least delayed as far as possible. While Woodside assesses the merits of objections or claims received, it acknowledges NOPSEMA's guidance in its brochure entitled Consultation on offshore petroleum environment plans information for the community, which states that relevant persons are free to respond on any matter and raise any concern, however this may not be able to be considered if it is outside the scope or purpose of the 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 5.3.6**). This information is summarised in **Appendix F** Table 1 and 2 of the EP and includes a statement of Woodside's response, or proposed response, if any, to each objection and claim.

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

5.7 Ongoing Consultation

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

As per Woodside's ongoing consultation approach (refer to **Section 7.10**), feedback and comments received from relevant persons continue to be assessed and responded to, as required, throughout the life of an EP, including during its assessment and once accepted, in accordance with the intended outcome of consultation (as set out in **Section 5.2**).

Should consultation feedback be received following the acceptance of an EP that identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate (see **Section 7.4**).

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 as well as EPOs, EPSs and MC for the Petroleum Activities Program following the methodology described in **Section 2**. MEEs require a further level of analysis and are assessed separately in **Section 6.7**.

6.2 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.

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

Within these categories, impact and risk assessment groupings are based on environmental aspect [26] (e.g., emissions, physical presence, etc). For all hazardous events considered, the worst credible consequence was assumed.

The ENVID identified 19 impacts and 22 risks associated with the Petroleum Activities Program. Planned activities and unplanned events are summarised in **Table 6-1** and **6-2**. 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, 6.7** and **6.8**.

[26] 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 (routine and non-routine)

Aspect	EP section	Source of impact	Key potential environmental impacts (refer to relevant EP section for details)	Controlled impact classification	Residual impact level (ALARP controls in place)	Acceptability of impact
Physical Presence: Interaction with other Marine Users	**6.6.1**	Presence of the NRC facility, subsea infrastructure including 1TL and 2TL.	Potential isolated social impact resulting from interference with other sea users (e.g., commercial and recreational fishing, and shipping).	F	Social and Cultural – No lasting effect (< 1 month). Localised impact not significant to area/item of cultural significance.	Broadly Acceptable
		Exclusion of other users from the PSZ.	Potential isolated social impact resulting from interference with other sea users (e.g., commercial and recreational fishing, and shipping).	F	Social and Cultural – No lasting effect (< 1 month). Localised impact not significant to area/item of cultural significance.	
		Presence of support vessels undertaking routine activities including IMMR within the PAA.	Potential isolated social impact resulting from interference with other sea users (e.g., commercial and recreational fishing, and shipping).	F	Social and Cultural – No lasting effect (< 1 month). Localised impact not significant to area/item of cultural significance.	
Physical Presence: Disturbance to Seabed	**6.6.2**	Presence of NRC facility and subsea infrastructure including 1TL and 2TL.	Localised modification of seabed habitat (formation of artificial reef) within the PAA.	F	Environment – No lasting effect (< 1 month). Localised impact not significant to environmental receptors.	Broadly Acceptable
		Subsea operations and IMMR activities.	Potential minor, localised modification of seabed habitat within the PAA.	E	Environment – Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attributes. Social and Cultural – Slight, short-term impact (<1 year) to a community or area/item of cultural significance.	
		Presence of redundant wells and infrastructure.	Potential minor, localised modification of seabed habitat within the PAA.	E	Environment – Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	
Routine Acoustic Emissions: Generation of Noise during Routine Operations	**6.6.3**	Noise generated within the PAA from: • NRC facility and associated infrastructure • Support vessel/s and IMMR activities • Helicopters	Potential localised behavioural impacts to marine fauna around and within the PAA.	F	Environment – No lasting effect (< 1 month). Localised impact not significant to environmental receptors. Social and Cultural – No lasting effect (<1 month). Localised impact not significant to area/item of cultural significance.	Broadly Acceptable
Routine and Non-Routine Discharges: Discharge of Hydrocarbons and Chemicals during Subsea Operations and Activities	**6.6.4**	Discharge of subsea control fluids.	Localised decrease in water quality around subsea system within the PAA with no lasting effect.	F	Environment – No lasting effect (< 1 month). Localised impact not significant to environmental receptors.	Broadly Acceptable
		Discharge of hydrocarbons remaining in subsea pipework and equipment as a result of subsea intervention works.	Slight short term decrease in water quality at release location during IMMR activities.	E	Environment – Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	
		Discharge of chemicals remaining in subsea pipework and equipment or the use of chemicals for subsea IMMR activities.	Localised decrease in water quality at release location during IMMR activities.	F	Environment – No lasting effect (< 1 month). Localised impact not significant to environmental receptors.	
		Discharge of minor fugitive hydrocarbon/chemicals from subsea equipment.	Potential slight short-term, localised decrease in water quality around subsea system within the PAA with no lasting effect.	F	Environment – No lasting effect (< 1 month). Localised impact not significant to environmental receptors.	

Aspect	EP section	Source of impact	Key potential environmental impacts (refer to relevant EP section for details)	Controlled impact classification	Residual impact level (ALARP controls in place)	Acceptability of impact
Routine and Non-Routine Discharges: Produced Water	**6.6.5**	Discharge of produced water during routine and non-routine operations.	Potential slight short-term, localised decrease in water quality (increased hydrocarbon and chemical concentrations) at discharge location and within mixing zone, with potential impacts to marine fauna (toxicity).	E	Environment – Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	Broadly Acceptable
Routine and Non-Routine Wastewater Discharges: Utility Systems, Drains and Support Vessels	**6.6.6**	Discharge of sewage, grey water and putrescible waste from the facility, and support vessels to the marine environment.	Potential localised, short-term decrease in water quality (increased nutrients and biological oxygen demand) at the discharge location.	F (Cumulative E)	Environment – No lasting effect (<1 month). Localised impact not significant to environmental receptors.	Broadly Acceptable
		Discharge of deck, bilge and drain water from the facility, and support vessels to the marine environment.	Potential localised, short-term decrease in water quality (increased hydrocarbon and chemical concentrations) at the discharge location.	F		
		Discharge brine and cooling water from the facility and support vessels to the marine environment.	Potential localised, short-term decrease in water quality (increased hydrocarbon and chemical concentrations) at the discharge location.	F		
Routine and Non-Routine Atmospheric and GHG Emissions: Fuel Combustion, Flaring and Fugitives	**6.6.7**	NRC internal combustion engines, operational flaring and fugitive emissions, and vessel emissions (including incinerators).	Potential short-term localised decrease in air quality, limited to the airshed local to the facility.	F	Environment – No lasting effect (< 1 month). Localised impact not significant to environmental receptors.	Broadly Acceptable
		Contingent flaring during well unloading for pressure test and clean up.				
		Temporary emissions from diesel engines				
		GHG emissions associated with onshore processing of gas, third party transportation, regassification and combustion by end users.				
Routine Light Emissions: Light Emissions from the Facility and Support Vessels	**6.6.8**	Light emissions from the NRC facility (including flaring) and support vessels.	Negligible, localised potential for behavioural disturbance of species in close proximity to riser platform and support vessels.	F	Environment – No lasting effect (< 1 month). Localised impact not significant to environmental receptors. Social and Cultural – No lasting effect (<1 month). Localised impact not significant to area/item of cultural significance.	Broadly Acceptable

Table 6-2: Environmental impact and risk analysis summary table – unplanned events (including major environmental events)

Aspect	EP section	Source of risk	Key potential environmental impacts (refer to relevant EP section for details)	Risk rating				Acceptability of impact
				Controlled impact classification	Residual impact level (ALARP controls in place)	Likelihood	Residual risk rating	
Unplanned events (accidents/incidents) – MEEs								
Unplanned Hydrocarbon Release: Loss of Well Containment (MEE-01)	**6.7.3**	Release of hydrocarbons resulting from loss of platform well containment.	Potential significant impacts to the marine environment: • long-term impacts to sensitive nearshore areas of offshore islands and coastal shorelines • disruption to marine fauna, including protected species • potential short-term interference with or displacement of other sea users.	B	Environment – Catastrophic, long-term impact (>50 years) on highly valued ecosystems, species, habitats or physical or biological attributes. Social and Cultural – Catastrophic, long-term impact (>20 years) to a community, social infrastructure or highly valued area/item of international cultural significance.	2	H	Acceptable if ALARP
Unplanned Subsea Equipment Loss of Containment (MEE-02)	**6.7.4**	Release of hydrocarbons resulting from subsea equipment loss of containment of mid-point of export pipeline and infrastructure.	Potential significant impacts to the marine environment: • medium-term impacts to sensitive offshore and nearshore areas • disruption to marine fauna, including protected species • potential short-term interference with or displacement of other sea users.	B	Environment – Major, long-term impact (10 to 50 years) on highly valued ecosystems, species, habitat or physical or biological attributes. Social and Cultural – Major, long-term impact (5–20 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	Acceptable if ALARP
		Release of hydrocarbons resulting from subsea equipment loss of containment from export pipeline and infrastructure at state boundary.		B		0	M	
Unplanned Hydrocarbon Release: Topsides Loss of Containment (MEE-03)	**6.7.5**	Hydrocarbon release from topside process equipment to the marine environment and atmosphere.	Potential significant impacts to the marine environment: • medium-term impacts to sensitive offshore and nearshore areas • disruption to marine fauna, including protected species • potential short-term interference with or displacement of other sea users.	C	Environment – Moderate, medium-term impact (2–10 years) on ecosystem, species, habitat or physical or biological attribute. Social and Cultural – Moderate, medium-term impact (2–5 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	Acceptable if ALARP
		Hydrocarbon release from topsides non-process equipment to the marine environment.		D	Environment – Minor short-term impact (1 to 2 years) on species, habitat (but not affecting ecosystem function), physical or biological attributes. Social and Cultural – Minor, short-term impact (1–2 years) to a community or highly valued area/item of cultural significance.	1	M	

Aspect	EP section	Source of risk	Key potential environmental impacts (refer to relevant EP section for details)	Risk rating				Acceptability of impact
				Controlled impact classification	Residual impact level (ALARP controls in place)	Likelihood	Residual risk rating	
Unplanned Hydrocarbon Release: Loss of Structural Integrity (MEE-04)	**6.7.6**	Hydrocarbon release from platform well to the marine environment and atmosphere	Potential significant impacts to the marine environment: • medium-term impacts to sensitive offshore and nearshore areas • disruption to marine fauna, including protected species • potential short-term interference with or displacement of other sea users.	B	Environment – Major, long-term impact (10–50 years) on highly valued ecosystems, species, habitat or physical or biological attributes. Social and Cultural – Major, long-term impact (5–20 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	Acceptable if ALARP
		Hydrocarbon release from subsea equipment to the marine environment and atmosphere		B	Environment – Major, long-term impact (10–50 years) on highly valued ecosystems, species, habitat or physical or biological attributes.	1	M	
		Hydrocarbon release from topsides equipment to the marine environment and atmosphere		C	Environment – Moderate, medium-term impact (2–10 years) on ecosystems, species, habitat or physical or biological attributes. Social and Cultural – Moderate, medium-term impact (2–5 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	
		Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of NRC		B	Environment – Major, long-term impact (10–50 years) on highly valued ecosystems, species, habitat or physical or biological attributes. Social and Cultural – Major, long-term impact (5–20 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	
Unplanned Hydrocarbon Release: Loss of Marine Vessel Separation (MEE-05)	**6.7.7**	Hydrocarbon release from platform well to the marine environment and atmosphere	Potential significant impacts to the marine environment: • medium-term impacts to sensitive offshore and nearshore areas • disruption to marine fauna, including protected species • potential short-term interference with or displacement of other sea users.	B	Environment – Major, long-term impact (10 to 50 years) on highly valued ecosystems, species, habitat or physical or biological attributes. Social and Cultural – Major, long-term impact (5–20 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	Acceptable if ALARP
		Hydrocarbon release from subsea equipment near the NRC to the marine environment and atmosphere		D	Environment – Minor short-term impact (1 to 2 years) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	1	M	

Aspect	EP section	Source of risk	Key potential environmental impacts (refer to relevant EP section for details)	Risk rating				Acceptability of impact
				Controlled impact classification	Residual impact level (ALARP controls in place)	Likelihood	Residual risk rating	
		Hydrocarbon release from topsides equipment to the marine environment and atmosphere		B	Environment – Major, long-term impact (10 to 50 years) on highly valued ecosystems, species, habitat or physical or biological attributes. Social and Cultural – Major, long-term impact (5–20 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	0	M	
		Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of NRC.		D	Environment – Minor short-term impact (1 to 2 years) on species, habitat (but not affecting ecosystem function), physical or biological attributes. Social and Cultural – Minor, short-term impact (1–2 years) to a community or highly valued area/item of cultural significance.	1	M	
Unplanned Hydrocarbon Release: Loss of Control of Suspended Load from Platform (MEE-06)	**6.7.8**	Hydrocarbon release from subsea equipment to the marine environment and atmosphere.	Potential significant impacts to the marine environment: • medium-term impacts to sensitive offshore and nearshore areas • disruption to marine fauna, including protected species • potential short-term interference with or displacement of other sea users.	B	Environment – Major, long-term impact (10 to 50 years) on highly valued ecosystems, species, habitat or physical or biological attributes. Social and Cultural – Major, long-term impact (5–20 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	Broadly Acceptable
		Hydrocarbon release from topsides equipment to the marine environment and atmosphere.	Potential minor short-term impacts to the marine environment including disruption to marine fauna, including protected species, and/or temporary impacts to water quality.	C	Environment – Moderate, medium-term impact (2–10 years) on ecosystem, species, habitat or physical or biological attribute. Social and Cultural – Moderate, medium-term impact (2–5 years) to a community, social infrastructure or highly valued area/item of national cultural significance.	1	M	
Unplanned events (accidents/incidents)								
Unplanned Discharge: Hydrocarbon release during Bunkering/refuelling and Chemical Release during Transfer, Storage and Use	**6.8.1**	Accidental discharge of marine diesel or chemicals to the marine environment during transfer, storage or use.	Potential slight short-term impacts to marine water quality with no lasting effect.	D	Environment – Minor short-term impact (1 to 2 years) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	1	M	Broadly Acceptable

Aspect	EP section	Source of risk	Key potential environmental impacts (refer to relevant EP section for details)	Risk rating				Acceptability of impact
				Controlled impact classification	Residual impact level (ALARP controls in place)	Likelihood	Residual risk rating	
Unplanned Discharges: Hazardous and Non-hazardous Waste Management	**6.8.2**	Incorrect disposal or accidental discharge of non-hazardous and hazardous waste to the marine environment.	Potential slight short-term impacts to the marine fauna, and localised temporary impacts to water quality and marine sediments.	E	Environment – Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	2	M	Broadly Acceptable
Physical Presence: Interactions with Marine Fauna	**6.8.3**	Physical presence of support vessels resulting in collision with marine fauna.	Potential injury or death of marine fauna (single animal), including protected species.	E	Environment – Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	2	M	Broadly Acceptable
		Physical presence of bird proofing/exclusion devices resulting injury to seabirds.	Potential injury of seabird (single animal), including protected species.	F	Environment – No lasting effect (<1 month). Localised impact not significant to environmental receptors.	1	L	Broadly Acceptable
Physical Presence: Introduction of Invasive Marine Species	**6.8.4**	Invasive species in vessel ballast tanks or on support vessels/submersible equipment.	Potential introduction of invasive marine species possibly resulting in an alteration of the localised environment.	E	Environment – Slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attributes.	1	L	Broadly Acceptable

6.2.1 Cumulative Impacts

Woodside has assessed the cumulative impacts of the Petroleum Activities Program in relation to other relevant petroleum activities that could realistically result in overlapping temporal and spatial extents. The closest facilities to the North Rankin Complex include the Goodwyn Alpha platform (21 km west) and the Okha FPSO (33 km east) (**Section 4.10.5**). However, given that the sources of environmental risks and impacts from the Petroleum Activities Program are localised, the potential for cumulative impacts is considered to be low.

Three streams of liquid wastes are discharged to the marine environment in the PAA, but these are discharged at relatively small volumes and from widespread points, as follows:

- Hydrocarbons and chemicals released from subsea operations, including well control at the well head locations, and IMMR activities the occur intermittently throughout the PAA (Section 6.6.4);
- PW released from the NRA platform at varying rates up to a maximum of 1900 m^3/day, which dilutes within a mixing zone of 300 m radius from the platform (Section 6.6.5); and
- Routine operational discharges of sewage, grey water, putrescible waste, deck, bilge and drain water from the NRC facility and support vessels, and brine and cooling water from support vessels, which are low-toxicity and relatively low-volume discharges (Section 6.6.6).

These streams are released into deep water in the open ocean and are highly unlikely to cause cumulative impacts, spatially or chemically. 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 Management 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.

EPOs, EPSs and MC for the Petroleum Activities Program have been identified to allow Woodside's environmental performance to be measured and through the implementation of this EP, to determine whether the EPOs and EPSs have been met.

The EPOs, EPSs and MC specified are consistent with legislative requirements and Woodside's standards and procedures. They have been developed based on the legislation, codes and standards, good industry practices and professional judgement outlined in **Sections 2.6.1.4** and **2.8**, as part of the acceptability and ALARP justification process.

The EPOs, EPSs and MC are presented throughout this section and in **Appendix D**. A breach of these EPOs or EPSs constitutes a 'Recordable Incident' under the Environment Regulations (refer to **Section 7.11.4**).

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 – Regulation 21(2) and 21(3)*	*Consultation – Regulation 25*

Impacts and Risks Evaluation Summary **Summary of ENVID outcomes**														
	Environmental Value Potentially Impacted ***Regulation 21(2) and 21(3)***							***Evaluation*** ***Section 2***						
Source of Risk ***Regulation 21(1)***	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Consequence / Impact	Likelihood	Risk Rating	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) and 21(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)[27]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
ALARP/Hierarchy of Control Tools Used – Section 2.8.1				
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.*
Major Environmental Events				
*MEEs are subject to additional analysis and evaluation as outlined in **Sections 2.7** and **6.7.2**. ALARP is demonstrated through controls being analysed for selection, based on their independence, and prioritised in accordance with hierarchy of controls, and further analysed to consider the type of effect the control provides.*				
ALARP Statement *Made on the basis of the environmental risk/impact assessment outcomes, use of the relevant tools appropriate to the Decision Type (**Section 2.6.1**) and a proportionality assessment. Regulation 34 (b).*				

Demonstration of Acceptability
Acceptability Statement *Made on the basis of applying the process described in **Section 2.8.2** and taking into account internal and external expectations, risk/impact to environmental thresholds and use of environment decision principles. Regulation 34(c).*

[27] Qualitative measure

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*[28] *T: The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.*	**C No.** *Identified control adopted to ensure that the impacts and risks are continuously reduced to ALARP.* *Regulation 21(5)(c).*	**PS No.** *Statement of the performance required of a control measure. Regulation 21(7)(a).*	**MC No.** *Measurement criteria for determining whether the outcomes and standards have been met. Regulation 21(7)(c).*

[28] Where impact/consequence descriptors are capitalised and presented within EPOs in **Section 6**; performance level corresponds with those aligned with the Woodside Risk Matrix (refer **Section 2.6.3**).

6.5 Environment Risk / Impact not Deemed Credible

Where the ENVID identified and assessed a source of environmental impact or risk as not applicable (not credible), it does not form part of this EP. These sources of impacts and risks are described in the following sections for information only.

6.5.1 Shallow / Near-shore Activities

The Petroleum Activities Program is located in water depths of ~30 to 162 m. Water depths are the shallowest where the Export Trunkline Operational Area meets the WA state waters at ~30 m. The Export Trunkline Operational Area is ~7 km from nearest landfall (Dampier Archipelago). The associated impacts and risks of shallow/near-shore vessel activities such as unplanned anchoring and vessel grounding were assessed as not credible.

6.6 Planned Activities

6.6.1 Physical Presence: Interaction with Other Marine Users and Values

Context		
Facility Layout and Description – **Section 3.5** Support Vessels – **Section 3.8** Subsea IMMR Activities – **Section 3.11**	Cultural Values and Heritage – **Section 4.9** Socio-economic– **Section 4.10**	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-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Presence of the NRC facility, subsea infrastructure including 1TL and 2TL.							✓	A	F	-	-	LCS GP PJ	Broadly Acceptable	**EPO 1**
Exclusion of other users from the PSZ.							✓	A	F	-	-			
Presence of support vessels undertaking routine activities including IMMR within the PAA.							✓	A	F	-	-			

Description of Source of Impact

Operations

The NRC facility was commissioned in 1984 and is marked on nautical charts. The platforms are surrounded by a 500 m radius PSZ within which vessels are prohibited from entering unless authorised by Woodside. The PSZ is a critical safety control intended to reduce the likelihood of interactions between vessels and the facility. Implementation of the PSZ excludes other users from a small area (~0.95 km^2), The platforms are highly visible under most conditions and are lit to meet operational requirements and navigational codes and regulations. The nature of the facility (large steel structure) ensures a clear radar return to alert ships fitted with radars.

Routine vessel activities are mostly concentrated within the PSZ (e.g., activities performed by platform support vessels at the facility). Subsea support vessels may undertake activities (e.g., IMMR activities, removing redundant equipment) within the PAA at any time. The duration and location of these activities vary depending on the activity being undertaken.

There is a series of subsea infrastructure associated with operations that may have interactions with other marine users. The AHO has been notified of the location of all existing subsea infrastructure including all wells and the two export trunklines. Water depths of the existing subsea infrastructure range from ~30 m at the State waters boundary and ~125 m (at the NRC facility).

Impact Assessment

Exclusion and Displacement of Other Users

Interaction with other marine users and the Petroleum Activities Program may result in localised changes to their functions, interests or activities while intermittent vessel-based activities are underway.

Commercial Fishing

The PAA overlaps three Commonwealth and 13 State managed commercial fisheries management areas. Historical fisheries effort data was assessed to evaluate the actual fishing effort of fisheries within the fisheries management areas and the PAA. The assessment indicates that only eight of the State managed fisheries have the potential for interaction with the Petroleum Activities Program. No Commonwealth managed fisheries were assessed as having the potential to interact with the Petroleum Activities Program. The likely interaction and presence of commercial fishing vessels was assessed based on fisheries management plan areas, catch-effort methodologies, historical effort and consultation.

Commercial fishing vessels in the vicinity of the Offshore Facility Operational Area are most likely to be participants of the Pilbara Demersal Scalefish Fishery and the Mackerel Managed Fishery. The Pilbara Demersal Scalefish Fishery (PDSF) includes the Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF), the Pilbara Trap Managed Fishery and the Pilbara Line Fishery. The PDSF use a combination of limited entry, effort allocations (time), gear limits, plus spatial zones (including extensive trawl closures) as management measures. The Offshore Facility Operational Area is located within, Zone 2 – Area 6; of the PDTIMF, as designated Pilbara offshore closed waters, an area closed to trawling since 1997.

The Export Trunkline Operational Area overlaps with Zone 2, Area 1 of the PDSF as well as the Onslow Prawn Managed Fisheries. The Export Trunkline Operational Area located within PDSF Zone 2, Area 1 is approximately 164 km^2, or less than 0.7% of the total Zone 2, Area 1 area (which is ~24,580 km^2). Trawl fishing is the primary catch method for the Onslow Prawn Managed Fisheries and may occur from fisheries in the PDSF. Therefore, the presence of subsea infrastructure could present risk of equipment entanglement and subsequent equipment damage or loss.

Considerations of the potential for interaction with the Specimen Shell Fishery during the consultation process in the development of this EP has been considered. These have included the potential for interactions at the state-water boundary in the Export Trunkline Operational Area, relating to IMMR activities. The fishery is largely diver-based, targeting specimen shells in water depths of mostly <30m. WAFIC reported during consultation for the activity that they do not consider the fishery to be relevant.

Impacts from the physical presence of the NRC facility and subsea infrastructure (other than 1TL and 2TL discussed above) are expected to be confined to localised displacement of fishing effort from the Offshore Facility Operational Area with no lasting effect.

Tourism and Recreation

Tourism and recreation activity in the PAA could include recreational and charter fishing from vessels and is expected to be infrequent. Any recreational and charter fishing from vessels is largely undertaken using lines. These activities are most likely to occur around Glomar Shoals (25 km east from the PAA at the closest point) and Rankin Bank (54 km south-west from the PAA at the closest point). The Export Trunkline Operational Area is 36 km to the Dampier boat ramp at its closest point (at the State boundary).

Given the distance from boating facilities, lack of natural attractions and water depth of the PAA, very little recreational or charter fishing is expected to occur. As such, impacts to recreational and charter fishing (entanglement of equipment, displacement of fishers) are expected to be localised with no lasting effect.

Shipping

Commercial shipping in the region is commonplace, with 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 has introduced a series of shipping fairways, within which commercial vessels are advised to navigate. The fairways are not mandatory, but AMSA strongly recommends commercial vessels remain within the fairways when transiting the region.

No shipping fairways interact with Offshore Facility Operational Area. One fairway travelling parallel to the coast from Barrow Island to the Dampier Shipping Fairways overlaps with the southern end of the Export Trunkline Operational Area**.**

The use of shipping fairways is considered to be good seafaring practice, and the Australian Ship Reporting System (AUSREP) managed by AMSA indicates routine adherence to established fairways. As the NRC facility has been operational since 1984, is marked on nautical charts and is surrounded by a 500 m PSZ, the likelihood of interactions between commercial vessels and the facility is inherently low.

The presence of the NRC facility and support vessels will not result in impacts to commercial shipping. AMSA endorses the use of established fairways none of which overlap the Offshore Facility Operational Area. The potential

for temporary displacement of commercial shipping is limited to any interaction that may arise in the vicinity of a single fairway traversing the Export Trunkline Operational Area or from commercial vessels that chose to operate outside AMSA established fairways. This is considered to be a localised impact, and of no lasting effect.

Oil and Gas

The GWA facility, operated by Woodside, is the nearest other facility to the NRC and the two facilities are connected by the Goodwyn Alpha Interfield Line. The nearest offshore facility to the PAA not operated by Woodside is the VOGA operated Wandoo B platform which is 4 km west of the Export Trunkline Operational Area. Given the distance between the PAA and petroleum activities undertaken by other operators, no impacts to other operators will occur as a result of the presence of the riser platform, support vessels or subsea infrastructure.

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. Complying with Marine Orders 21, 27 and 30 reduces the likelihood of interaction of vessels with the facility.	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**
Implementation of a PSZ extending 500 m, measured from each point of the outer edge of the NRC fixed offshore platform structure, which reduces the likelihood of interaction with vessels.	F: Yes. CS: Minimal cost. Standard practice.	The PSZ is a requirement under Australian regulations and reduces the likelihood of interactions with third parties and the NRC platform.	Control based on legislative requirement – must be adopted.	Yes **C 1.2**
Good Practice				
Notifying Australian Hydrographic Service (AHS) of location of permanent infrastructure to enable	F: Yes. CS: Minimal cost. Standard practice.	Notifying Australian Hydrographic Service (AHS) of location of permanent infrastructure to enable	Benefits outweigh cost/sacrifice.	Yes **C 1.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
update of maritime charts, thereby reducing the likelihood of unplanned interactions within the PAA.		update of maritime charts, thereby reducing the likelihood of unplanned interactions with NRC infrastructure.		
Consultation undertaken in support of the Petroleum Activities Program, to ensure marine users are informed and aware, thereby reducing the likelihood of unplanned interactions within the PAA.	F: Yes. CS: Minimal cost. Standard practice.	Consultation ensures marine users are informed and aware, thereby reducing the risk of unplanned interactions within the PAA.	Benefits outweigh cost/sacrifice.	Yes **C 1.4**
Notify AMSA Joint Rescue Coordination Centre (JRCC) 24 to 48 hrs before activities where vessels will be undertaking activities in, or in close proximity of (within 1 km of), shipping lanes.	F: Yes CS: Minimal cost. Standard Practice.	Communicating the Petroleum Activities Program to other marine users ensures they are informed and aware should emergency response be required.	Benefits outweigh cost sacrifice.	Yes C 1.5
Notify AMSA Joint Rescue Coordination Centre (JRCC) 24 to 48 hrs before activities, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	F: Yes CS: Minimal cost. Standard Practice.	Notification of AHO will enable them to issue a Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) thereby reducing the likelihood of unplanned interactions with other vessels.	Benefits outweigh cost sacrifice.	Yes C 1.5
Notify AHO of activities no less than four working weeks prior to scheduled activity commencement date, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	F: Yes CS: Minimal cost. Standard Practice.	Notification of AHO will enable them to issue a Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) thereby reducing the likelihood of unplanned interactions with other vessels.	Benefits outweigh cost sacrifice.	Yes C 1.5
Professional Judgement – Eliminate				
Reducing the area of the PSZ.	F: No. PSZ is mandated by the	Not assessed, control not feasible.	Not assessed, control not feasible.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	OPGGS Act and is an SCE; it cannot be reduced. CS: Not assessed, control not feasible.			
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
Over-trawl protection on export trunklines.	F: Yes. Over-trawl protection on export trunklines. CS: Significant additional cost associated with designing and installing trawl protection on export trunklines ~105 km in length each in Commonwealth waters.	Over-trawl protection on subsea infrastructure could mitigate the potential for commercial fishing trawl gear to damage infrastructure or result in gear loss.	Given the Export Trunkline Operational Area only overlies a small portion of the fisheries management area (less than 0.7%) open to trawl fishing, the cost of installing over-trawl protection is considered grossly disproportionate to the environmental benefit.	No
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 adopted controls appropriate to manage the potential impacts of the physical presence of the NRC facility, subsea infrastructure including 1TL and 2TL as well as support vessels on other users. The impacts from planned activities are considered ALARP and no reasonable additional or alternative controls were identified that would further reduce impacts without grossly disproportionate sacrifice.				
Demonstration of Acceptability				
Acceptability Statement: The impact assessment has determined that, given the adopted controls, physical presence of the Petroleum Activities Program represents a negligible impact that is unlikely to result in a potential impact greater than an isolated social impact to commercial fishing, recreational fishing and shipping as well as other oil and gas titleholders. Further opportunities to reduce the impacts have been investigated above. The adopted controls align with legislative requirements, are considered good oil-field practice/industry best practice and meet requirements of Australian Marine Orders, and expectations of AMSA, relevant fisheries bodies and the AHO provided in consultation with relevant persons. 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 NRC facility, subsea infrastructure including 1TL and 2TL as well as support vessels to a level that is broadly acceptable.				

EPOs, EPSs and MC for NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 1 Prevent adverse interactions with other marine users within the PAA during the Petroleum Activities Program.	**C 1.1** Contract vessels complying with Marine Orders for safe vessel operations: • Marine Order 21 (Safety of navigation and emergency procedures) 2016 • Marine Order 27 (Safety of navigation and radio equipment) 2016 • Marine Order 30 (Prevention of Collisions) 2016.	**PS 1.1** Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class (Marine Orders 21, 27 and 30).	**MC 1.1.1** Marine verification records demonstrate compliance with standard maritime safety procedures (Marine Orders 21, 27 and 30).
	C 1.2 Implementation of a PSZ extending 500 m, measured from each point of the outer edge of the NRC fixed offshore platform structure, which reduces the likelihood of interaction with vessels.	**PS 1.2** Petroleum Safety Zone maintained and monitored for incursions.	**MC 1.2.1** Records of adverse interactions in the Petroleum Safety Zone with other marine users are recorded.
	C 1.3 Notifying AHO of locations of new permanent infrastructure to enable AHO to update maritime charts.	**PS 1.3** Woodside to notify AHO of location of new permanent infrastructure.	**MC 1.3.1** Records demonstrate that AHO has been notified of new permanent infrastructure.
	C 1.4 Undertaking consultation program to advise relevant persons of the Petroleum Activities Program and provide opportunity to raise objections or claims.	**PS 1.4** Implement a consultation process that conforms to the requirements of the Environment Regulations.	**MC 1.4.1** Records demonstrate a consultation program that conforms to the requirements of the Environment Regulations has been undertaken (refer to **Section 5**).

EPOs, EPSs and MC for NRC Operations			
	C 1.5 Notify AMSA Joint Rescue Coordination Centre (JRCC) of IMMR activities within shipping lanes.	**PS 1.5** Woodside to notify AMSA Joint Rescue Coordination Centre (JRCC) of IMMR activities within shipping lanes 24-48 hours before activity commencement.	**MC 1.5.1** Records demonstrate AMSA Joint Rescue Coordination Centre (JRCC) has been notified of IMMR activities within shipping lanes.
	C 1.9 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 to 48 hrs before activities commence.	PS 1.9 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 1.9.1 Records demonstrate a once-off notification provided to AMSA's JRCC within required timeframes before mobilisation.
	C 1.8 Notify AHO of activities no less than four working weeks prior to scheduled activity commencement date, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	PS 1.8 Woodside to notify AHO of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	MC 1.8.1 Records demonstrate that AHO notifications complete.

6.6.2 Physical Presence: Disturbance to the Seabed

Context		
Facility Layout and Description – **Section 3.5** Support Vessels – **Section 3.8** Subsea IMMR Activities – **Section 3.11** Maintaining for Decommissioning – **Section 3.11.1.6.5**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Cultural Values and Heritage – **Section 4.9**	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-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Presence of NRC facility and subsea infrastructure including 1TL and 2TL.		✓	✓		✓			A	F	-	-	LCS GP PJ	Broadly Acceptable	**EPO 2** **EPO 3**
Subsea operations and IMMR activities.		✓	✓		✓		✓		E					
Presence of redundant wells and infrastructure (to be maintained and flushed for progressive decommissioning).		✓	✓		✓				E					

Description of Source of Impact

Seabed disturbance arising from the Petroleum Activities Program can occur as a result of:

- Physical presence of the NRC facility and subsea infrastructure (operational and redundant),
- Scour, spans, and flowline movement inherent in design,
- Vessel-based subsea IMMR activities.

Subsea Operations

The presence of subsea infrastructure may result in localised scouring around the infrastructure due to currents, subsurface waves and seabed sediment fluid dynamics. 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 and is influenced by prevailing metocean conditions. Lateral movement which is larger than expected may necessitate IMMR activities. Refer to MEE-02 Subsea equipment loss of containment (**Section 6.7.4**) which includes controls to limit scour and flowline movement within integrity requirements.

IMMR Activities

To maintain the integrity of subsea infrastructure, Woodside may be required to undertake routine subsea IMMR activities, as described in **Section 3.11**. Activities that constitute IMMR may impact the benthic environment in the vicinity of the activity. IMMR activities identified as impacting the benthic environment include, but are not limited to:

- inspections – localised sediment resuspension by ROV
- marine growth removal – localised resuspension of sediment; removal of marine biota from subsea infrastructure and the NRC facility jacket
- sediment relocation – 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
- flowlines and umbilical replacement – minor, localised modification of benthic habitat in the vicinity of the flowline/umbilical
- spool repair/replacement – minor, localised modification of benthic habitat in the vicinity of the spool
- temporary placement of tools on the seabed; e.g., baskets – minor localised modification of the benthic habitat in the vicinity of the items

The seabed area predicted to be impacted varies depending on the nature and scale of the IMMR activity, however, no impact is expected beyond the PAA. Span rectification is the IMMR activity with the greatest potential to modify the seabed, due to the alteration of the existing soft sediment habitat to (artificial) hard substrate. Woodside's operational experience on the North West Shelf indicates that these activities (e.g., span rectification, pipeline protection and stabilisation) are typically restricted to relatively short (tens of metres) linear sections of pipeline with up to approximately 100 m^2 of seabed impacted.

Impact Assessment

The seabed where the presence of the NRC facility and subsea infrastructure involves a direct physical footprint is characterised as predominantly soft sediments. This type of habitat is associated with sparsely distributed infauna and sessile fauna and is widely represented in the PAA and the NWS Province more broadly.

The presence of the NRC facility and 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 facility and subsea infrastructure has led to the development of ecological communities which would not have existed otherwise. For example, pipeline infrastructure has been shown to support more diverse fish assemblages and benthic biota (McLean *et al*., 2017; Bond, 2018). These communities are relatively diverse compared to the open water and soft sediment habitats surrounding the PAA.

The provision of artificial habitat associated with the NRC facility and subsea infrastructure has either no adverse environmental impact or a low level of positive environmental impact through increasing biological diversity.

Subsea Operations and IMMR Activities

Subsea operations resulting in scour and infrastructure movements may impact the seabed continuously. Scour around subsea infrastructure may result in localised impact alterations to the surrounding soft sediment benthic habitats with no lasting effect to environmental receptors. Flowline movement is limited to areas within design and integrity envelopes, and may result in slight, localised impact to soft sediment benthic habitats, typically on the scales of metres to tens of metres along the flowline corridors.

IMMR activities can result in two potential impacts:

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

Water and Sediment Quality

Seabed disturbance may include localised and temporary decline in water quality due to increased suspended sediment concentrations and increased sediment deposition caused by IMMR activities near the seabed. Similarly, removal of marine growth from the facility jackets to maintain structural integrity on an as-required basis would cause localised temporary decrease in water quality and suspended sediment from water jetting activities.

Each discrete IMMR activity near the seabed is likely to cause a single brief disturbance resulting in a transient plume of suspended sediment. This plume will subsequently be deposited down current as particles resettle. Such localised and short-term events may affect small areas of the seabed and consequently impact the associated biota (typically sparsely distributed infauna and sessile fauna). Given the expected nature and scale of resuspension resulting from IMMR activities, impacts such as smothering or burial are not expected. Rather, impacts are likely to be restricted to increased ingestion of inedible sediments by filter feeders. Biota in the region are well adapted to periodic turbidity events caused by cyclones and tidal movements. As such, impacts from turbidity caused by IMMR activities are not expected to have any lasting effect on benthic biota.

Benthic Habitats

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

The seabed of the PAA is characterised by soft sediments such as sand, mud, and silt, with sparse epifauna, which are broadly present in the NWS Province. Hard substrates are not known to be present in the PAA, but occur in the region more broadly and can host more diverse benthic communities **Section 4.4**.

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 may disturb a small area (typically <100 m^2) of soft sediment habitat. Scour and flowline movement may result in localised impacts to soft sediment habitats, typically on the scales of metres to tens of metres. To prevent or remediate scour or flowline movement, soft sediment habitat is replaced by hard substrate (e.g., concrete mattresses, rocks, etc), which is generally uncommon in the middle and outer NWS Province. Over time, this hard substrate is expected to be colonised by sessile benthic biota (e.g., sponges, gorgonians, etc), which may support higher biodiversity than surrounding soft sediment habitats.

ROV activities near the seafloor and small amounts of sediment relocation may result in slight and short-term impacts to deepwater biota, detailed above, as a result of elevated turbidity and localised sedimentation. However, elevated turbidity and sedimentation would only be expected to be slight and short-term, and is therefore, not expected to have any consequential impact to environment receptors.

The use of water jetting to remove marine growth on wellheads and subsea infrastructure will result in temporary suspension of organic matter and localised increase in turbidity. Water jetting will be limited to what is necessary to clean infrastructure prior to intervention or other necessary activity.

Values and Sensitivities

Ancient Coastline at 125 m Depth Contour

The Offshore Facility Operational Area overlaps approximately 40 km^2 of the 16,189.8 km^2 Ancient Coastline at 125 m Depth Contour, equivalent to ~0.2% of the KEF. Recent 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 unconsolidated soft sediment habitat (sand/mud/silt) interspersed by patches of hard substrate supporting negligible epibenthic biota (Wakeford *et al*., 2023) Such habitats are widely distributed in the NWS Province. No significant escarpments, species of conservation significance, emergent features or areas of high biological productivity characteristically associated with the Ancient Coastline at 125 m KEF have been observed in the Offshore Facility Operational Area.

Cultural Heritage

As described in **Section 4.9**, the Offshore Facility Operational Area overlaps the Ancient Coastline at 125 m depth contour KEF and therefore there is the potential that Indigenous Cultural features may exist and these may potentially be impacted during seabed disturbance resulting from operations and associated activities. While no cultural features have been identified in the PAA, further archaeological studies will be undertaken prior to the activity commencing to understand any potential cultural features (See **Section 6.10** for further details).

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
A ROV as-left survey is undertaken at the end of activities to confirm all temporary equipment has been removed and to record location of new subsea infrastructure	F: Yes CS: Minimal cost ROV as left survey is standard practice	In accordance with OPGGS Act Section 572 all equipment is removed when no longer in use.	Legislative requirement	Yes **C 2.1**
Location of subsea infrastructure brought	F: Yes. CS: Minimal cost. Standard Practice.	In accordance with OPGGS Act Section 572 the location	Benefits outweigh cost sacrifice.	Yes **C 2.2**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
into the PAA is tracked and recorded.		of equipment is tracked to enable future removal.		
Monitoring and maintenance of redundant infrastructure is undertaken in accordance with the IMMR process.	F: Yes. CS: Minimal cost. Standard practice.	Monitoring and maintenance of redundant subsea infrastructure undertaken to enable cost efficient and safe removal and meet Section 572(2) and (3) of the OPGGS Act.	Legislative requirement.	Yes **C 2.3**
Remove redundant infrastructure as soon as it's no longer used, nor to be used.	F: Yes. CS: Removal of property throughout the operational life where it is incorporated within or located close to live infrastructure introduces additional complexities and HSE risk that can be avoided if removed during EOFL decommissioning	While subsea equipment is in-situ, risks and impacts to the seabed are considered to be low, so only a minor reduction in sediment /habitat disturbance from less infrastructure in the PAA would be achieved.	Cost of standalone retrieval work scopes are considered disproportionate to the benefit gained when considering the risks of retrieval during current operations versus risk of extending duration in-situ. Costs could be reduced by conducting progressive decommissionin g campaigns across North West Shelf assets to remove redundant equipment. Wet stored subsea infrastructure is also RBI assessed and managed while preserved to ensure integrity and retrieval options are maintained for potential full removal.	No
None Identified.				
Good Practice				
Anchoring in the NRC petroleum safety zone will be prohibited except in emergency situations	F: Yes CS: Minimal cost	By minimising anchoring the potential impacts to benthic habitat is reduced.	Benefits outweigh cost sacrifice.	Yes **C 2.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
or under issuing of a specific permit, reducing potential impacts to benthic habitats.				
Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment that will cause new seabed disturbance in depths of <130m to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options.	Review of data by suitably qualified maritime archaeologist will inform potential exclusion or avoidance areas for seabed disturbance. Implementing this process will protect and minimise any physical impacts to underwater cultural heritage. Additionally, this process is not inconsistent with the guidelines for working in the near and offshore environment to protect Underwater Cultural Heritage (DCCEEW, 2024a).	Benefits outweigh cost/ sacrifice.	Yes **C 3.1**
Unexpected finds of potential Underwater Cultural Heritage sites/ features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in **Section 7.6**.	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 Protect Underwater Cultural Heritage under the UCH Act, expert advice and community expectations.	Benefits outweigh cost/ sacrifice.	Yes **C 3.2**
Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (ATSIHP Act).	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefit outweighs cost/ sacrifice.	Yes **C 3.3**
Relevant vessel crew will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure (**C 3.2**).	F: Yes. CS: Minimal cost.	Ensures workforce are suitably aware of legal and process requirements for managing cultural features and heritage values.	Benefits outweigh cost/ sacrifice.	Yes **C 3.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Professional Judgement – Eliminate				
All vessels used for IMMR will be DP capable – use of DP instead of anchoring reduces potential impacts to benthic habitats.	F: Yes. CS: Minimal. Subsea support vessels undertaking IMMR routinely use DP to hold station.	By using DP, the potential impacts to benthic habitat is reduced.	Benefits outweigh cost sacrifice.	Yes **C 2.5**
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 WMS requirement – must be adopted.	Yes **C 2.6** Refer also MEE-02
Monitoring of seabed surrounding NRC facility and 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 sparsely populated infauna habitat and low sensitivity of the environment surrounding the facility and associated subsea infrastructure, any environmental benefit gained is outweighed by costs associated with implementing control.	No
ALARP Statement:				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
On the basis of the environmental impact 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 the presence of the NRC facility and subsea infrastructure, subsea operations and IMMR activities. 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: The impact assessment has determined that, given the adopted controls, seabed disturbance from the ongoing presence of the NRC facility and subsea infrastructure represents only a slight impact to benthic habitats that will not affect ecosystem function. Other seabed impacts from subsea operations and IMMR activities are short-term and also represent only slight impacts to benthic habitats. 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 the presence of the NRC facility and subsea infrastructure, subsea operations and IMMR activities to a level that is broadly acceptable.				

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 2 Limit adverse impacts to seabed to Slight, short-term impact[29] beyond the physical footprint of the facility infrastructure during the Petroleum Activities Program.	**C 2.1** A ROV survey will be undertaken post maintenance or repair activity to confirm temporary equipment has been removed and to record location of new subsea infrastructure.	**PS 2.1** Temporary equipment is removed.	**MC 2.1.1** As left survey confirms temporary equipment is removed.
	C 2.2 Location of subsea infrastructure, brought into the PAA is tracked and recorded.	**PS 2.2** Location of equipment, including infrastructure made redundant by the installation of a replacement, is recorded and updated in an inventory.	**MC 2.2.1** Records confirm location of replacement equipment and remaining redundant equipment.
	C 2.3 Monitoring and maintenance of redundant infrastructure is undertaken in accordance with the IMMR process.	**PS 2.3** IMMR/RBI process is applied to redundant equipment.	**MC 2.3.1** Records demonstrate that the IMMR/RBI process has been applied to redundant infrastructure.

[29] *Defined as 'slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attribute' as in **Table 2-3**, **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
			MC 2.3.2 Inspections and maintenance activities have been completed in accordance with the IMMR/RBI process.
	C 2.4 Anchoring in the NRC petroleum safety zone will be prohibited except in emergency situations or under issuing of a specific permit.	**PS 2.4** No anchoring within NRC petroleum safety zone unless an emergency or Woodside authorisation provided.	**MC 2.4.1** Records demonstrate that any anchoring in the NRC petroleum safety zone was an emergency or approved by Woodside.
	C 2.5 All vessels used for IMMR activities will be DP capable.	**PS 2.5** Use of DP by IMMR activity vessels (no anchoring required) unless an emergency or Woodside authorisation provided.	**MC 2.5.1** Records demonstrate that all subsea support vessels are equipped with DP system.
	C 2.6 Monitoring and maintenance of subsea infrastructure to manage scour and flowline movement within integrity envelope.	**PS 2.6** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P09 – Pipeline Systems to maintain the minimum required mechanical integrity to prevent loss of containment due to scour/flowline movement.	**MC 2.6.1** Records demonstrate implementation of SCE technical Performance Standard(s) and SCE Management Procedure.
EPO 3 No adverse impact to Underwater Cultural Heritage[30] without a permit[31].	**C 3.1** Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	**PS 3.1** Existing survey data reviewed by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment.	**MC 3.1.1** Records demonstrate review of existing archaeological data completed prior to commencement of activities.

[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*

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

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 3.2 Unexpected finds of potential Underwater Cultural Heritage sites/features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in **Section 7.6**	**PS 3.2** In the event that an Underwater Cultural Heritage site or feature is identified, implement an Unexpected Finds Procedure set out in **Section 7.6**	**MC 3.2.1** No non-compliance with the Unexpected Finds Procedure.
	C 3.3 Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the ATSIHP Act.	**PS 3.3** Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (**Section 7.6**) including to the Australasian Underwater Cultural Heritage Database.	**MC 3.3.1** Records of potential UCH finds reported to relevant authorities and stakeholders.
	C 3.4 Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (**C 3.2**).	**PS 3.4.1** Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure through an induction.	**MC 3.4.1** Records demonstrate vessel crew are made aware of potential to encounter UCH.

6.6.3 Routine Acoustic Emissions: Generation of Noise during Routine Operations

Context		
Facility Layout and Description – **Section 3.5** Operational Details – **Section 3.6** Support Vessels – **Section 3.8** Helicopter Operations – **Section 3.9** Subsea IMMR Activities – **Section 3.11.13.11**	Protected Species – **Section 0** Cultural Values and Heritage – **Section 4.9**	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-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Noise generated within the PAA from the NRC facility, support vessels, IMMR activities and helicopters.						✓	✓	A	F	-	-	LCS GP PJ	Broadly Acceptable	**EPO 4**

Description of Source of Impact

The NRC facility, support vessels, subsea operations including IMMR activities as well as helicopter operations will generate noise both in the air and underwater, due to normal operation of machinery and propeller movement. Typical noise levels for these sources are provided in **Table 6-3** and Table 6-4, with more detailed descriptions provided below. This noise will contribute to and can exceed ambient noise levels which range from around 90 dB re 1 µPa sound pressure level (SPL) under very calm, low wind conditions, to 120 dB re 1 µPa SPL under windy conditions (McCauley, 2005).

Table 6-3: Indicative source characteristics of continuous underwater noise associated with the Petroleum Activities Program as reported in †Jiménez-Arranz *et al*. (2017) and by ‡McCauley (2005) and §McCauley (2002)

Acoustic Noise Sources	***Estimated SPL (dB re 1 µPa SPL) @1 m unless otherwise stated***	***Frequency Range (kHz)***
Vessels (Continuous)		
Support and HLV using DP‡	171 (calm) 179 (moderate) 187 (rough)	Broadband
Wellhead, Flowlines and Subsea Infrastructure (Continuous)		
Wellhead§	113	Broadband
Choke valve§	155	Broadband
Production platforms		

Riser platform†	110–130 @100 m	Broadband (mainly < 100 Hz)
* Range provided was not measured at the noise source; therefore, this should be used as an indicative estimate only and cannot be used to estimate exposure thresholds closer to the source.		

Continuous (Non-Impulsive) Sources

Support Vessels

Vessels may emit noise through the hull acting as a transducer (e.g. machinery vibration being converted to underwater noise), as well as through cavitation from fast moving surfaces such as propellers and thrusters. The main source of noise from support vessels, relates to the use of DP thrusters (i.e. cavitation from thruster propellers). Support vessels involved in the Petroleum Activities Program are expected to spend time holding station using DP, which requires the use of thrusters. Thruster noise (from cavitation caused by propellers) is typically the most significant noise source for vessels holding station, with other noise sources typically relatively minor (McCauley 1998).

Thruster noise is typically high intensity and broadband in nature. McCauley (1998) measured underwater broadband noise up to approximately 182 dB re 1 µPa2 m^2 (rms SPL) from a support vessel holding station in the Timor Sea. It is expected that noise levels up to this level may be generated by vessels using DP during the Petroleum Activities Program.

All support vessels are required to comply with EPBC Regulation 2000 – Part 8 Interacting with Cetaceans to reduce the likelihood of collisions with cetaceans (refer to **Section 6.8.3**). Implementing this control may incidentally reduce the noise generated by vessels in proximity to cetaceans as vessels will be travelling slower; slower vessel speeds may reduce underwater noise from machinery (main engines) and propeller cavitation.

Helicopter Transfers

Helicopter operations involve landing and take-off on the NRC facility or vessel helidecks. Activities relevant to the PAA will relate to the landing and take-off of helicopters on the NRC (which occurs typically at 1-2 day intervals) and potentially subsea support vessels. Sound emitted from helicopter operations is typically below 500 Hz (Richardson *et al*., 1995). The peak received level diminishes with increasing helicopter altitude, but the duration of audibility often increases with increasing altitude. Richardson *et al*. (1995) reports that helicopter sound is audible in air for four minutes before it passed over underwater hydrophones, but detectable underwater for only 38 seconds at 3 m depth and 11 seconds at 18 m depth. Noise levels reported for a Bell 212 helicopter during fly-over was reported at 162 dB re 1 µPa (SPL) and for Sikorsky-61 is 108 dB re 1 µPa (SPL) at 305 m (Simmonds *et al*., 2004). Water has a very high acoustic impedance contrast compared to air, and the sea surface is a strong reflector of noise energy (i.e., very little noise energy generated above the sea surface crosses into and propagates below the sea surface (and vice versa) – the majority of the noise energy is reflected). The angle at which the sound path meets the surface influences the transmission of noise energy from the atmosphere through the sea surface, angles >13° from vertical being almost entirely reflected (Richardson *et al*., 1995). Given this, and the typical characteristics of helicopter flights within the PAA (duration, frequency, altitude and air speed), the opportunity for underwater noise levels to exceed the behavioural thresholds is not considered credible and is not assessed further.

Wellhead, Pipelines and Subsea infrastructure

The noise produced by an operational wellhead was measured by McCauley (2002). The broadband noise level was very low, 113 dB re 1 µPa, which is only marginally above rough sea condition ambient noise. For a number of nearby wellheads, the sources would have to be in very close proximity (< 50 m apart) before their signals summed to increase the total noise field (with two adjacent sources only increasing the total noise field by three dB). Hence for multiple wellheads in an area, the broadband noise level in the vicinity of the wellheads would be expected to be of the order of 113 dB re 1 µPa and this would drop very quickly to ambient conditions on moving away from the wellhead, falling to background levels within < 200 m from the wellhead.

Based on the measurements of wellhead noise discussed in McCauley (2002), which included flow noise in pipelines, noise produced along a pipeline may be expected to be similar to that described for wellheads, with the radiated noise field falling to ambient levels within a hundred meters of the pipeline.

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 NRC 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. Noise from choke valve operation was considered minor compared to noise generated by vessels using thrusters in the area.

Given the low levels of noise emitted by subsea infrastructure such as wellheads, choke valves and flowlines, no impacts to marine fauna from these noise sources are expected. Measurements of noise generated by choke valves indicated it is relatively high frequency (>1 kHz), and hence it attenuates over relatively short distances in the water

column; significant impacts to marine fauna are not considered credible and therefore not considered further in the impact assessment.

Platform Machinery

Production platforms have machinery mounted on decks raised above the sea, hence, most noise is transmitted to the marine environment from air. Machinery noise onboard the NRC facility may be radiated into the underwater environment via the jacket legs and risers, which may act as transducers. Underwater noise generated by the NRC facility is expected to be minimal, with monitoring programs indicating that underwater noise from platforms is typically very low or not detectable (McCauley 2002).

Gales (1982) assessed noise from 18 oil and gas platforms, including 11 bottom-standing fixed platforms during production operations (i.e. consistent with the NRC riser platforms). The study found the strongest noise levels were relatively low frequency (< 100 Hz, and mostly between 4 and 38 Hz), with sound levels of 110 to 130 dB re 1 µPa @100 m (Gales, 1982). Noise from the platforms was found to be lower than levels recorded from support vessels, with a cumulative increase in overall underwater noise of 20–30 dB from the noise produced by a support vessel operating in the vicinity of an operations platform (Gales, 1982). Noise emitted from machinery on riser platforms is limited relative to other operating facilities due to the smaller size and the lack of processing facilities on the riser platform. Therefore, it is likely that the range provided by Gales (1982) is a conservative estimate. In summary, noise emissions generated by the facility is expected to be minimal.

Flaring

The HP and LP flare system will generate noise from combustion. Noise from flaring represents a possible health and safety risk to personnel, and noise from flaring was considered in the design of the NRC facility to manage the occupational health and safety risks associated with noise (e.g. height specification of flare tower). Noise from flaring is emitted at the top of the flare tower, which is approximately 135 m above sea level. Noise from the tip of the flare is not constrained and will spread spherically in all directions.

Received levels from airborne propagation modelling were used to ascertain the underwater received levels during flaring activities for a drilling and subsea installation activity (Woodside, 2019). Only a very small fraction of the acoustic energy produced from flaring will transmit through the air/water boundary due to the surface of water acting as a reflective plane and a significant component of acoustic energy reflecting back into the air. While underwater received sound pressure level during flaring is estimated to be 136 dB re 1µPa at 1m (SPL) below the sea surface it is estimated to attenuate to ambient levels within a very short distance (e.g., metres) and therefore is not considered further in the impact assessment.

Impulsive Sources

IMMR Activities

Subsea IMMR activities may result in localised, temporary increased in underwater noise. Sources proposed (Table 6-4) have frequency outputs ranging from 2 kHz (SBP CHIRP) to 900 kHz (SSS).

MBES and SSS are low-energy, high-resolution geophysical survey instruments that may be required for use every 1 to 6 years to identify buckling, movement, scour and seabed features. MBES have operating frequencies ranging from 12 kHz to 700 kHz (Jimenez-Arranz *et al*., 2017) with peak pressure (PK) source levels between approximately 210 and 245 dB re 1 µPa at 1 m (Jimenez-Arranz *et al*., 2017; Zykov, 2013; MacGillivray *et al*., 2013). MBES generate micro-pulses of high frequency sound in a highly focused beam directed towards the seabed, which attenuates rapidly underwater compared to lower frequency sound sources. Due to this directionality and short pulse duration, there is relatively low sound energy and very limited horizontal sound propagation. The high operating frequencies of many MBES are typically above the hearing range of the low frequency (LF) cetacean (7 Hz to 35 kHz; Southall *et al*., 2019) and high frequency (HF) cetacean (150 Hz to 160 kHz; Southall *et al*. 2019) species that may occur in the PAA. The high operating frequencies of MBES are also above the hearing ranges of marine turtles (<2 kHz, Finneran *et al*., 2017) and the majority of fish species (100 Hz to several kHz; Ladich, 2000, Popper *et al*., 2014). Additionally, sound sources generated closer to the seabed have a lower received noise level in the horizontal direction due to seafloor scattering and absorption.

Similar to MBES, SSS produce micro-pulses of sound in a focussed swath directed at the seabed. SSS operating frequencies may range between 75 kHz and 900 kHz, with sound energy attenuating rapidly with horizontal distance from the main swath (Jimenez-Arranz *et al*., 2017; Zykov, 2013). Representative source levels range between 200 and 235 dB re 1 µPa PK at 1 m (Jimenez-Arranz *et al*., 2017; Zykov, 2013). The high operating frequencies of SSS places the dominant sound frequencies above the hearing range of most marine fauna species, including LF cetaceans, turtles and fish, although some of the lower frequency devices may be audible to HF cetaceans (MacGillivray *et al*., 2013; Zykov, 2013).

Sub-bottom profiling may also be undertaken every 1-6 years to identify features under the seabed. Most commercial SBPs are small, low-powered, high-resolution and shallow-penetrating systems, producing electrical pulses across a range of frequencies (Salgado Kent *et al*., 2016; Jiménez-Arranz *et al*., 2017). The instruments proposed for the survey produce pulses of sound between approximately 2 kHz and 30 kHz with source levels between approximately 170 and 230 dB re 1 µPa PK at 1 m.

Table 6-4: Frequency ranges of IMMR sources and marine fauna

IMMR source	*Frequency Range (kHz) (Jimenez-Arranz et al., 2017)*	*Estimated range of Source Level (dB re 1 µPa SPL @1 m*	*Potential disturbance from acoustic source*						
			Low-frequency cetaceans[1]	*Mid-frequency cetaceans[1]*	*High frequency cetaceans[1]*	*Marine turtles[3]*	*Whale sharks[2]*	*Fish – hearing specialists[4]*	*Fish – hearing generalists[4]*
Auditory frequency range (kHz)			***0.07 – 22***	***0.15 – 160***	***0.2 – 180***	***0.1–0.7***	***0.02–0.8***	***0.1–3***	***0.2–0.8***
MBES	12–700 (deep) 150 – 700 (shallow)	210–247	Deep only	✓	✓				
SSS	75–900	200–234		✓	✓				
SBP – Chirp	2–23	167–212	✓	✓	✓			✓	
SBP – Pinger	2–20	161–205	✓	✓	✓			✓	
USBL / Acoustic Array	18–36	187 – 196	✓	✓	✓				

[1] *Southall et al 2007*

[2] *The estimated auditory bandwidth of whale sharks is unknown, a range of 0.02 – 0.8 kHz has been applied which is the known approximate sensitivity of among sharks as outlined in Myrberg 2001. Although there are no known studies on whale shark auditory hearing bandwidths, research suggests the large hearing structures of the whale shark would be most responsive to long-wave length, low-frequency sound (Myrberg, 2001).*

[3] *The estimated auditory bandwidth of turtles is 0.1 – 0.7 kHz as determined by electro-physical studies (McCauley 1994)*

[4] *Effects of seismic airguns and other sources of pulsed sound on marine fishes (URS, 2007).*

Positioning Equipment

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 of medium frequency sound, generally within the range 21 to 31 kHz. The estimated SPL at source ranges from 180 to 202 dB re 1 µPa SPL at 1 m (Jiménez-Arranz *et al*., 2017). Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby, and when required for precise positioning they will emit one chirp every five seconds.

Impact Assessment

Receptors

Water depths in the PAA range from ~30 m to 130 m. The fauna associated with these areas will be predominantly pelagic species of fish, with migratory species such as turtles, birds, whale sharks and cetaceans present in the area seasonally. These fauna species may include those associated with Traditional Custodians values. In particular, a number of EPBC listed marine species have BIAs which overlap the PAA, which are discussed below. One KEF, the Ancient Coastline at 125 m depth contour, also overlaps the Offshore Facility Operational Area. Fauna associated with the Ancient Coastline at 125 m depth contour, such as demersal fish, may also be impacted upon by noise emissions. While the Ancient Coastline at 125 m KEF may be associated with outcroppings of hard substrate, no evidence of significant reefs associated with such outcroppings have been found in the area overlapping the Offshore Facility Operational Area. Note some demersal fish are also likely to be associated with subsea infrastructure such as the export pipelines.

Potential Impacts of Noise

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

- by causing direct physical effects on hearing or other organs. Hearing loss may be temporary (temporary threshold shift (TTS) referred to as auditory fatigue), or permanent threshold shift (PTS) (injury)
- by masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey)
- 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) depends upon several factors such as water column depth, pressure, temperature gradients, and salinity, as well as surface and bottom conditions.

Cetaceans

Species Sensitivity and Exposure Thresholds

Marine mammals and especially cetaceans rely on sound for important life functions including individual recognition, socialising, detecting predators and prey, navigation and reproduction (Weilgart, 2007; Erbe *et al*., 2015; Erbe *et al*., 2018). Underwater noise can affect marine mammals in various ways including interfering with communication (masking), behavioural changes, a shift in the hearing threshold (PTS and TTS) and physical damage and stress (Erbe, 2012; Rolland *et al*., 2012). Frequency-specific hearing sensitivity differs among marine mammals, influencing how they are affected by noise exposure. For the purposes of predicting the effects of noise exposure on different groups of cetaceans, blue whales, humpback whales, southern right whales and other large mysticete (baleen) whales are categorised as LF cetaceans, while odontocetes (toothed whales and dolphins) are categorised as HF or VHF cetaceans (Southall *et al*., 2019).

The thresholds that could result in behavioural response for cetaceans is expected to be 120 dB re 1 µPa (SPL) for continuous noise sources, and 160 dB re 1 µPa (SPL) for impulsive noise sources (**Table 6-5**). 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). The adopted thresholds are based on best data available and published in peer-reviewed literature and represent conservative internationally accepted and applied impact evaluation thresholds.

Table 6-5: Thresholds for permanent threshold shift, temporary threshold shift and behavioural response onset for low frequency, high-frequency and very high frequency cetaceans for continuous and impulsive noise

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

Source: NMFS (2014, 2018; Southall, 2019; NOAA, 2019).

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

The Conservation Management Plan for the Blue Whale (BWCMP) (Commonwealth of Australia, 2015a), is a recovery plan established under the EPBC Act. The BWCMP specifically identifies areas crucial for the whales' survival, referencing established BIAs within the National Conservation Values Atlas (NCVA), including foraging areas and migration corridors – two essential aspects of their life cycle. Action Area A.2.3 of the BWCMP states: "Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to utilise the area without injury, and is not displaced from a foraging area". Furthermore, from the Guidance on Key Terms within the Blue

Whale Conservation Management Plan (DAWE, 2021), underwater noise emissions from the petroleum activities program must not:

- result in injury[32] (TTS or PTS) to any pygmy blue whale in BIAs, or
- displace a pygmy blue whale from a foraging BIA.

These requirements have been considered throughout the impact assessment with respect to blue whales.

As noted above, the PAA is located approximately 43 km south of the pygmy blue whale migration BIA, with the nearest foraging BIA (Ningaloo possible foraging area) approximately 327 km to the south of the Offshore Facility Operational Area. The PAA is within the distribution BIA for the pygmy blue whale.

The National Recovery Plan for the Southern Right Whale (DCCEEW, 2024b) also identified anthropogenic noise as a threat, however the BIAs and habitat critical to the survival are over 200 km away, well outside the area where behavioural responses are expected to extend from the Operational Area and as such, there is not expected to be any anthropogenic noise from the petroleum activity that could displace or interfere with life cycle activities within, or near, the reproduction or migration BIAs and habitat critical to the survival.

Predicted Underwater Noise Impacts to Cetaceans

NRC Facility and Support Vessel Noise Impacts

Support vessels holding station are considered to be the predominant noise source related to the Petroleum Activities Program. McCauley (1998) measured underwater broadband noise equivalent to about 182 dB re 1 µPa SPL (SPL) at 1 m from a support vessel holding station in the Timor Sea. Similar noise levels are expected to be generated by vessels used for the Petroleum Activities Program.

PTS and TTS thresholds for LF cetaceans are 199 dB re 1 μPa^2 s (SEL weighted) and 179 dB re 1 μPa^2 s (SEL weighted), respectively for continuous noise sources (refer **Table 6-5**). Typical sound exposures generated by the NRC facility and a support vessels using DP would not exceed these levels (except at extremely close ranges to the source), so PTS and TTS in LF cetaceans, such as large baleen whales, is not anticipated.

Potential impacts to cetaceans may instead include behavioural disturbance from support vessels. The threshold that could result in behavioural response for LF cetaceans if exceeded, is expected to be 120 dB re 1 µPa (SPL) for continuous noise sources such as support vessels (including those on DP, refer **Table 6-5**). Acoustic modelling for an operating floating production unit (FPU) and support vessel on DP predicted that sound from each sound source individually would exceed the 120 dB threshold up to a maximum distance of 670 m, while combined sound sources exceeded the threshold to a distance of 1.07 km (McPherson *et al*., 2019). Although some site and facility-specific differences may exist, 1 km is considered broadly indicative of the range at which underwater sound propagating from the NRC facility and support vessel may cause a behavioural response in cetaceans.

As the PAA overlaps the migratory BIA for the pygmy blue and humpback whale, these species may be seasonally present, though limited to individuals infrequently transiting through the area. The PAA is surrounded by open water, with no restrictions (e.g., shallow waters, embayments) to an animal's ability to avoid the activities. Behavioural responses by cetaceans (such as pygmy blue whales and humpback whales) may result in a deviation in course during migration, which is expected to be insignificant in the context of the long distances over which individuals migrate (thousands of kilometres). Interactions between pygmy blue whales or humpback whales with vessels typically result in avoidance behaviour, with whales generally moving away from vessels (Bauer, 1986; Stamation *et al*., 2010). In summary, potential impacts to pygmy blue whales, humpback whales and other cetaceans from predicted noise levels are expected to be limited to behavioural impacts within a localised area around vessels with no lasting effect.

IMMR Activities

Zykov (2013) conducted acoustic modelling for five low energy survey instruments off the coast of California, including MBES, SSS and sub-bottom profiler. All equipment types were modelled in the sandy bottom environment, similar to that of the PAA. Although the bathymetry, salinity, water temperature and sub-seafloor sediment type may differ, given the similarities in equipment type and seafloor habitat, the modelling is considered comparable for the nature and scale of the low energy IMMR survey equipment.

The high operating frequencies of MBES and SSS places the majority of sound frequencies above the auditory range of LF cetaceans. Dolphins and other HF cetaceans, which have peak hearing sensitivity up to 110 kHz, with potential for some limited hearing ability up to approximately 160 kHz (NMFS, 2018; Southall *et al*., 2019), may be able to detect a small amount of the sound energy from some instruments in the lower operating frequency ranges available for MBES and SSS (MacGillivray *et al*., 2013; Zykov, 2013).

[32] *For the purpose of interpreting and applying Action Area A.2 of the Blue Whale CMP, injury is both permanent and temporary hearing impairment (Permanent Threshold Shift and Temporary Threshold Shift) and any other form of physical harm arising from anthropogenic sources of underwater noise (DAWE, 2021).*

The modelling by Zykov (2013) indicates that the sound emissions from MBES and SSS do not exceed PTS and TTS accumulated sound exposure criteria for LF cetaceans at any distance, and do not exceed criteria for HF cetaceans beyond 2 to 3 m horizontal distance from the source, which is not considered to be a credible exposure scenario for mobile marine fauna. Zykov (2013) also estimated the maximum distance at which the unweighted 160 dB re 1 µPa (SPL) behavioural disturbance threshold for impulsive sound was reached was 290 m for MBES and 690 m for SSS. Again, it is emphasised that many MBES and SSS instruments may operate at frequencies outside of the hearing range of cetaceans and so these would not be audible or result in behavioural disturbance. For instruments with frequencies that overlap with the hearing ranges of cetaceans, a significant proportion of the sound energy may still be outside of their hearing ranges; therefore, the perceived sound levels are reduced and the horizontal distances at which behavioural disturbances may occur are less than those inferred by the unweighted 160 dB re 1 µPa (SPL) behavioural disturbance threshold. For example, modelling of weighted SPLs by Zykov (2013) for MBES indicated that the 160 dB re 1 µPa (SPL) behavioural threshold was not exceeded for LF cetaceans at any distance and was limited to approximately 205 m horizontal distance for HF cetaceans. For SSS, the modelling of weighted SPLs indicated that the 160 dB re 1 µPa (SPL) behavioural threshold was exceeded at horizontal distances of 110 m for LF cetaceans and 611 m for HF cetaceans.

Acoustic modelling of sub-bottom profilers by Zykov (2013) and McPherson and Wood (2017), indicates limited horizontal sound propagation outside of the main directional field of sound. The modelling studies also indicate that PK and SEL_{24h} thresholds for PTS are not exceeded. The potential for TTS resulting from SEL_{24h} is limited to within a few metres from the moving sound source (Zykov, 2013; McPherson and Wood, 2017), which is not considered to be a credible exposure for mobile marine fauna. Exceedance of the 160 dB re 1 µPa SPL behavioural response threshold for impulsive sound is limited to within a few metres in most instances, or up to a maximum of 50 m depending upon which SBP instrument is used, water depth and the seabed sediment characteristics (Zykov, 2013; McPherson and Wood, 2017).

Potential impacts to cetaceans from MBES, SSS and sub-bottom profiler may, therefore, include behavioural disturbance if in close proximity to the survey instruments, but ranges to disturbance are less than or equivalent to disturbance ranges for the IMMR vessel itself. PTS or TTS are not considered credible, given individuals would need to be directly next to the noise sources for prolonged duration.

Transponders used for positioning during IMMR activities have the potential to cause some temporary behavioural disturbance to cetaceans. The typical frequencies of 21 to 31 kHz produced by the transponders are most audible to HF cetaceans such as toothed whales and dolphins rather than LF cetaceans, and the source levels (180 to 202 dB re 1 µPa at 1 m SPL) rapidly attenuate within a very short distance from the source, such that PTS or TTS are not considered credible. Based on empirical spreading loss estimates measured by Warner and McCrodan (2011), received levels from USBL transponders are expected to exceed the cetacean behavioural response threshold for impulsive sources to a distance of ~42 m.

Transmissions are not continuous but consist of short ‘chirps’ with a duration that ranges from 3 to 40 milliseconds. Transponders do not emit sound when on standby. When required for general positioning, they emit one chirp every five seconds (estimated to be required for 4 hrs at a time). When required for precise positioning, they emit one chirp every second (estimated to be required for 2 hrs at a time). Due to the short duration chirps, the temporary and intermittent use and the mid frequencies used by positioning equipment, the acoustic noise from the transponders is unlikely to have a substantive effect on the behavioural patterns of cetaceans.

Potential impacts from predicted noise levels from the NRC facility, support vessels, and IMMR survey activities are not considered to be ecologically significant at a population level.

Marine Turtles

Species Sensitivity and Exposure Thresholds

Noise interference is listed as a key threat to threatened marine turtles identified as potentially occurring within the PAA. Turtles may occur in the PAA, although there are no known significant foraging habitat (i.e. no emergent islands, reef habitat or shallow shoals/banks). The Export Trunkline Operational Area overlaps the internesting BIA for the flatback, loggerhead, green and hawksbill turtle species. Similarly, the Export Trunkline Operational Area overlaps designated habitat critical to the survival of the species in the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017); however, these areas are likely to hold the same significance as the existing BIAs with slightly differing spatial areas.

There is a paucity of data regarding responses of marine turtles to underwater noise. The Recovery Plan for Marine Turtles (Commonwealth of Australia, 2017) notes there is limited information available on the impact of noise on marine turtles and that the impact of noise on turtle stocks may vary depending on whether exposure is short (acute) or long-term (chronic). However, turtles have been shown to respond to low frequency sound, with indications that they have the highest hearing sensitivity in the frequency range 100 to 700 Hz (Bartol and Musick, 2003).

McCauley *et al*. (2000) observed the behavioural response of caged green and loggerhead turtles to impulsive sound (an approaching seismic airgun). For received levels above 166 dB re 1 µPa SPL, the turtles increased their

swimming activity and above 175 dB re 1 µPa they began to behave erratically, which was interpreted as an agitated state. The 166 dB re 1 µPa SPL has been used as the threshold level for a behavioural disturbance response by the US NMFS (NSF, 2011) and is applied to this impact assessment. No quantitative (numerical) thresholds have been developed for behavioural effects from continuous sources (e.g., vessel noise) on marine turtles. However, Popper *et al*. (2014) propose qualitative impact criteria for near-field, intermediate and far-field exposures (Popper *et al*., 2014). Finneran *et al*. (2017) presents thresholds for turtle PTS and TTS for both impulsive and continuous sound exposures.

The thresholds listed in **Table 6-6** are considered appropriate for the assessment of effects from impulsive and continuous sound sources during the Petroleum Activities Program.

Table 6-6: 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: SEL24h (dB re 1 µPa².s)	TTS onset thresholds: SEL24h (dB re 1 µPa².s)	Behavioural response (dB re 1 µPa)	PTS onset thresholds: SEL24h (dB re 1 µPa².s)	TTS onset thresholds: SEL24h (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).

Predicted Underwater Noise Impacts to Turtles

NRC Facility and Support Vessel Noise Impacts

As noted above, vessels holding station are considered to be the predominant noise source related to the Petroleum Activities Program, with source levels of approximately 182 dB re 1 µPa SPL at 1 m from a support vessel holding station considered to be representative of noise levels generated by vessels used for the Petroleum Activities Program.

Although there are no quantitative sound exposure thresholds for impacts on marine turtles resulting from continuous noise sources, the relative risk for behavioural response is expected to be high within tens of metres of the source, medium within hundreds of metres and low within kilometres from the source (refer **Table 6-6**). PTS and TTS thresholds for turtles are 220 dB re 1 µPa2 s (SEL weighted) and 200 dB re 1 µPa2 s (SEL weighted), respectively (refer **Table 6-6**). Typical noise levels generated by the NRC facility and a support vessel using DP would not exceed these levels (except at extremely close ranges to the source), and prolonged exposure of transient marine turtles at close range is not considered a credible scenario.

As outlined above, marine turtles are not expected to be in the area in high numbers even during nesting and internesting periods. Marine turtles are also capable of moving away from potential noise sources, and there are no constraints to their movement within the PAA. Therefore, impacts to marine turtles from support vessels or the NRC are expected to be of no lasting effect.

IMMR Activities

As outlined above for cetaceans, Zykov (2013) conducted noise modelling for low energy survey instruments, with the modelling for MBES, SSS and sub-bottom profiler considered comparable for the nature and scale of the low energy IMMR survey equipment. The operating frequencies of MBES (12 to 700 kHz) and SSS (75 to 900 kHz) are well above the hearing range of turtles (0.1 to 2 kHz) and so no disturbance is expected. It is possible that some of the lower frequency sound emitted by sub-bottom profilers (2 to 30 kHz) may be audible to turtles, but again, a large proportion of the sound energy may be at frequencies that are outside of their normal auditory range. Modelling of impulsive sub-bottom profiler sound emissions by Zykov (2013) and McPherson and Wood (2017) indicates that the 166 dB re 1 µPa (SPL) behavioural disturbance threshold for turtles may only be exceeded within metres or tens of metres of the survey instruments. Therefore, behavioural impacts would be highly localised. PTS or TTS is not considered to be credible given the rapid attenuation of sound close to the source and a large proportion of the sound energy is produced at frequencies outside the peak hearing frequency range of turtles.

Transponders used for positioning during IMMR activities typical operate at frequencies of 21 to 31 kHz which is well outside the peak hearing frequency range of turtles (0.1 to 2 kHz). Therefore, no impacts are considered credible.

Potential impacts from predicted noise levels from the operating facility, project vessels, and IMMR survey activities are not considered to be ecologically significant at a population level.

Fish, Sharks and Rays

Species Sensitivity and Exposure Thresholds

Fishes are primarily sensitive to the particle motion component of sound at close range to a sound source, while the presence of the swim bladder results in a varying degree of sensitivity of some fishes to sound pressure (Popper and Hawkins, 2018; Popper *et al*., 2019). Consequently, fishes are broadly categorised into three groups with respect to their hearing capabilities that are relevant to the types of fishes and sharks that may be present in the PAA (Popper *et al*., 2014):

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

Sound exposure criteria applicable to continuous sound sources are presented in **Table 6-7**. Popper *et al*. (2014) propose relative risk criteria (high, moderate, low) for injury, impairment and behavioural effects to fishes at three distance categories, near (N) (tens of metres from the source), intermediate (I) (hundreds of metres from the source), and far (F) (kilometres from the source).

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

Receptor	Mortality and potential mortal injury	Impairment			Behaviour
		Recoverable Injury	TTS	Masking	
Fish: no swim bladder	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder not involved in hearing	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder involving hearing	(N) Low (I) Low (F) Low	170 dB SPL for 48-hours	158 dB SPL for 12-hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low
Fish eggs and fish larvae	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low

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

Predicted Underwater Noise Impacts to Fish

NRC Facility and Support Vessel Noise Impacts

Vessels holding station using DP are expected to produce sound equivalent to about 182 dB re 1 µPa SPL at 1 m. Modelling undertaken by McPherson *et al*. (2019) of sound produced by facility and vessel operations found that recoverable injury to some types of fish would only be possible if they remained within a distance of less than 10 m for 48 hours, and TTS if fishes remained within 10 m for at least 12 hours. Pelagic fish are highly mobile and the types of demersal fishes known to occur in the vicinity of the NRC facility (e.g., snappers, emperors, cods and groupers) will exhibit some fidelity to the area but are still relatively free-swimming and are not constrained to such close ranges (i.e., 10 m). Therefore, free-swimming fish remaining in close range to sound sources for periods that subject themselves to TTS and injury is not considered to be a credible scenario.

There are no quantitative sound exposure thresholds for impacts on fish, sharks and rays resulting from continuous noise sources. The relative risk for behavioural response is expected to be high within tens of metres of the source, medium within hundreds of metres and low within kilometres from the source (refer **Table 6-6**). In the context of the riser platform, the largest contribution to operational noise is from the topside and near the surface, with lower sound levels produced from subsea infrastructure such as choke valves. Similarly, sound from a PSV would be at the

surface. While some localised behavioural avoidance and masking in the vicinity of the loudest sound sources from the riser platform, choke valves and PSV may occur in some fishes, no lasting effect is anticipated. Fish are also known to habituate to continuous noise sources, which is consistent with fish congregating around operating offshore oil and gas structures.

The foraging BIA for whale shark overlaps the Offshore Facility Operational Area, and the species may be seasonally present (particularly between March and July) during their annual migration to and from the aggregation area off Ningaloo Reef. Currently, there are no quantitative sound exposure thresholds relevant to whale sharks. It is expected that the potential effects of noise on whale sharks are the same as for other fish species, resulting in minor, localised and temporary behavioural change such as avoidance. Therefore, impacts to whale sharks from support vessels or the platform are expected to have no lasting effect.

IMMR Activities

As outlined above, Zykov (2013) conducted noise modelling for low energy survey instruments, with the modelling for MBES, SSS and sub-bottom profiler considered comparable for the nature and scale of the low energy IMMR survey equipment. The operating frequencies of MBES (12 to 700 kHz) and SSS (75 to 900 kHz) are well above the peak hearing ranges of fish (100 Hz to several kHz) and so no disturbance is expected. It is possible that some of the lower frequency sound emitted by sub-bottom profilers (2 to 30 kHz) will be audible to fish, but again, a large proportion of the sound energy may be at frequencies that are outside of their normal auditory range. Therefore, behavioural impacts would be highly localised. PTS or TTS is not considered to be credible given the rapid attenuation of sound close to the source and a large proportion of the sound energy is produced at frequencies outside the peak hearing frequency range of fish.

Transponders used for positioning during IMMR activities typical operate at frequencies of 21 to 31 kHz which is well outside the hearing frequency range of fish. Therefore, no impacts are considered credible.

Potential impacts from predicted noise levels from the NRC facility, support vessels and IMMR activities are not considered to be ecologically significant at a population level.

Cultural Values and Heritage

Through consultation and review of available literature (**Section 4.9**), Woodside understands that marine fauna that may be affected by noise emissions, such as marine mammals and turtles, are culturally important to Traditional Custodians. Traditional Custodians value these species both tangibly as well as intangibly as they can be considered a resource or linked to songlines and dreaming stories. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have obligation to care for a species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country.

For example, activities that impact turtle populations and their marine environment may have an indirect impact on some Indigenous communities if they deplete hunting areas and threaten local food security (Delisle *et al*., 2018). Whale species are subject of First Nations' increase ceremonies/rituals which are performed to enhance or maintain populations. As these thalu ceremonies are performed to maintain and increase populations of marine species, it is considered that management applies at the species/population level and not to individuals. For example, it is anticipated the thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound.

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

As described, potential impacts to marine fauna are predicted to be at an individual level, which are not considered to be ecologically significant at a population level. Impacts are not expected to occur to ecologically significant proportions of the populations of the species, nor expected to result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. (See **Section 6.10** for further details).

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[33]: • Support vessels will not travel greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and not approach closer than 100 m from a whale. • Support vessels will not approach closer than 50 m for a dolphin or turtle and/or 100 m for a whale (with the potential 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. • Support 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.	F: Yes CS: Minimal cost. Standard practice.	Implementation of these controls is primarily intended to reduce the likelihood of a collision between a cetacean, whale shark or turtle occurring. However, implementation may also provide some reduction in the potential for exposure of these fauna to sound levels in direct proximity to vessels.	Controls based on legislative requirements – must be adopted.	Yes **C 4.1**

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Good Practice				
Vary the timing of the Petroleum Activities Program to avoid ecologically sensitive periods for cetaceans and turtles	F: No. The Petroleum Activities Program occurs continuously over a five 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
Implement a shutdown zone around MBES, SSS and sub-bottom profiler for: • whales • marine turtles • whale sharks.	F: Yes. However, as equipment is underwater, effective implementation of zones is challenging from topside observation. CS: Moderate. Requires the provision of a dedicated suitably trained crew member to undertake Marine Fauna Observations.	Limited. The areas of disturbance for these devices are limited and injury/PTS/TTS is not expected to occur. In addition, it is noted that for many MBES and SSS, the frequency range of these devices are outside the estimated frequency hearing range of identified protected species (whales, turtles and whale sharks).	Acoustic MBES, SSS and sub-bottom profiler surveys are infrequently conducted (every 1 to 6 years) as part of the Petroleum Activities Program. The source levels and frequency range of these devices are mostly outside the estimated frequency hearing range of identified protected species (whales, turtles and whale sharks), so costs are considered disproportionate to benefits.	No
Have a dedicated experienced and trained Marine Fauna Observer (MFO) onboard vessels to undertake marine fauna observations.	F: Yes, however additional cost for dedicated and experienced MFO to be present during IMMR CS: Moderate, requires the provision of a dedicated experienced MFO to undertake Marine Fauna Observations.	Use of an MFO may detect fauna in the area, however control provides limited benefit when managing impacts associated with vessel noise alone.	Given limited benefit associated with the management of vessel noise impacts and costs associated with control implementation an experienced MFO is not considered necessary.	No
Professional Judgement – Eliminate				
Eliminate the use of DP on vessels during the Petroleum Activities Program.	F: No. Both platform and subsea support vessels are required to reliably hold station during the Petroleum Activities	Not considered, control not feasible.	Not considered, control not feasible.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	Program. Failure to do so may lead to loss of separation between vessels and infrastructure. This would result in unacceptable safety and environmental risk (loss of vessel separation has been identified as a MEE – **Section 6.7.7**). CS: Not considered, control not feasible.			
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 impact assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the potential impacts from routine acoustic emissions from the NRC facility, support vessels and subsea infrastructure as well as helicopter operations. 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: The impact assessment has determined that, given the adopted controls, impacts from routine acoustic emissions from the NRC facility, support vessels and subsea infrastructure as well as helicopter operations represent a negligible impact /disturbance to marine fauna within the PAA. Further opportunities to reduce the impacts and risks have been investigated above. The impacts are consistent with 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 of acoustic emissions to an acceptable level.				

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 4 Limit adverse impacts on fauna from noise emissions from the Petroleum Activities Program to those with 'No lasting effect'[34].	**C 4.1** EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, which include the following measures[35]: • Vessels will not travel greater than 6 knots within 300 m of a cetacean or turtle (caution zone) and not approach closer than 100 m from a whale. • 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.	**PS 4.1** Vessels will comply with the EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans to manage the risk of fauna collision.	**MC 4.1.1** Records demonstrate no breaches with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans and Woodside Marine Charterers Instructions. **MC 4.1.2** Records demonstrate reporting cetacean ship strike incidents to the National Ship Strike Database.

[34] *Defined in **Section 2.6.3**.*

[35] *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).*

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

Context		
Wells and Reservoirs – **Section 3.5.2** Subsea Infrastructure – **Section 3.5.4** Hydrocarbon and Chemical Inventories and Selection – **Section 3.10** Subsea IMMR Activities – **Section 3.11**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5**	Consultation – **Section 5**

Impacts 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-Economic***	***Decision Type***	***Consequence/Impact***	***Likelihood***	***Risk Rating***	***ALARP Tools***	***Acceptability***	***Outcome***
Discharge of subsea control fluids.		✓	✓		✓			A	F	-	-	LCS GP PJ	Broadly Acceptable	**EPO 5**
Discharge of hydrocarbons remaining in subsea pipework and equipment as a result of subsea intervention works (including pigging).		✓	✓		✓			A	E	-	-			
Discharge of chemicals remaining in subsea pipework and equipment or the use of chemicals for subsea IMMR activities.		✓	✓		✓			A	F	-	-			
Discharge of minor fugitive hydrocarbons/chemicals from subsea equipment.			✓					A	F	4	M			

Description of Source of Impact

Hydrocarbons and chemicals may be discharged as a result of planned routine and non-routine operations and activities and are described below.

Operational discharges including:

- discharge of subsea control fluids – HW443 subsea control fluid is used to control subsea and well-head valves remotely. Persephone wells utilize an open-loop system, designed to release control fluid from the subsea system;
- potential non-routine subsea fluid discharges associated with subsea equipment losses/weeps; and

- potential discharge of minor fugitive hydrocarbons from subsea equipment (e.g. weeps / seeps / bubbles).

IMMR activities (nominal discharges described in **Section 3.11.2**, including:

- discharge of residual hydrocarbons in subsea lines and equipment as a result of subsea IMMR and intervention activities (including pigging); and
- discharge of residual chemicals in subsea lines and equipment or the use of chemicals for subsea IMMR activities (including pigging).

Subsea Control Fluids

Subsea control fluid is used to control well-head valves remotely from the NRC facility (**Section 3.5.2**). Control fluid is supplied to valves via an open-loop system, designed to release small volumes of control fluid during operation (e.g. upon valve actuation) of up to ~2 m^3/day. Subsea control fluid may also be discharged during IMMR activities in connection with e.g. leak detection and SCM change outs (refer to **Section 3.11**).

Hydrocarbons

Typical hydrocarbon releases associated with IMMR activities are described in **Section 3.11**. IMMR activities may also result in small gas releases associated with isolation testing and breaking containment.

Chemicals

Chemicals may be introduced into subsea infrastructure and the production stream, either as process or non-process chemicals (e.g. corrosion inhibitors, biocides, scale inhibitors, etc.). Chemicals flow through the production process, with residual chemicals discharged as a component of the PW discharged overboard (refer to **Section 6.6.5**).

Chemicals may also be introduced into subsea infrastructure during IMMR activities. 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 (refer to **Section 3.11.2**).

The use of operational chemicals is restricted to that needed to complete a required task. All operational (process and non-process) chemicals are selected in accordance with the requirements of the chemical selection process described in **Section 3.10.2.**

Impact Assessment

There is potential for localised water column impact and adverse effects on marine biota as a result of planned routine and non-routine hydrocarbon and chemical discharges. However, planned discharge volumes of hydrocarbons and chemicals are negligible for routine discharges, highly infrequent for non-routine discharges, and are minimised as far as practicable via flushing of the lines back to the facility. Discharge locations are normally associated with subsea valves (subsea control fluid) or at disconnection points in subsea infrastructure.

Subsea Control Fluids

Subsea control fluids are selected in conformance with the chemical selection process outlined in **Section 3.10.2**.

The subsea control fluid used in Persephone subsea system is Oceanic HW443, which is water-based and has an OCNS rating of D with a substitution warning. The substitution warning is a result of the fluorescein dye which is approximately 150 ppm within the product. The dye is used to support leak detection and subsea IMMR troubleshooting. The product is non-toxic and does not have a potential to bioaccumulate.

Subsea control fluids are discharged from subsea valves at or near the seabed in relatively small volumes. Once released, control fluids are expected to mix rapidly in the water column and become diluted. Impacts from the release of subsea control fluids are considered to be localised to the immediate vicinity of the release location with no lasting effect, based on:

- the relatively small volumes of discharges;
- the low sensitivity of the receiving environment; and
- the rapid dilution of the release.

Hydrocarbons

The small quantities of hydrocarbons discharged during pipeline pigging operations, or that may be released during IMMR activities that break containment of isolated subsea infrastructure are buoyant. Given, however, the water depth, pressure, and the small volumes released, these hydrocarbons are unlikely to reach the sea surface. Rather, the release disperses and dissolves within the water column. While recognising the potential ecotoxicity and physical effects of released hydrocarbons (refer to **Section 6.8.1** for a discussion of the potential environmental impacts of small hydrocarbon releases), the low release volumes, dispersion and dissolution is expected to result in hydrocarbon contamination rapidly diluting to background levels. As such, impacts from routine and non-routine releases of hydrocarbons from IMMR activities are assessed as being highly localised with slight, short-term impacts. Given the highly infrequent nature of export pipeline pigging activities and low release volumes, impacts from pipeline pigging, are assessed as short-term and localised.

Chemicals

Chemicals introduced into subsea infrastructure during IMMR activities, including pigging, may be released. Any releases would be intermittent and small volumes. Such releases of chemicals from routine and non-routine discharges would be localised to the immediate vicinity of the release location, and have no lasting environmental effects, based on:

- the low potential for toxicity and bioaccumulation;
- the relatively small volumes of discharges;
- the low sensitivity of the receiving environment; and
- the rapid dilution of the release.

Values and Sensitivities

The Ancient Coastline at 125 m depth contour overlaps the Offshore Facility Operational Area. No significant escarpments, species of conservation significance, emergent features or areas of high biological productivity characteristically associated with this KEF have been observed in the PAA. 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)[36]***	***Benefit in Impact Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
None identified				
Good Practice				
Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • If chemicals with a different OCNS rating, sub warning or non-OCNS rated chemicals are required, chemicals are assessed in accordance with the procedure prior to use.	F: Yes. Woodside routinely implements a chemical selection process based on OCNS at the NRC. CS: Minimal. The OCNS is widely used throughout the industry, and chemical suppliers are aware of the requirements of the scheme.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Woodside's chemical selection process is used to ensure fluids discharged meet Woodside's chemical environmental risk assessment standards while still providing the required technical capability.	Yes **C 5.1**
Subsea infrastructure flushed where practicable during IMMR disconnection activities to reduce	F: Yes. Subsea infrastructure has been designed such that much of the	Flushing reduces the volumes/ concentration of hydrocarbons released to the environment.	Benefit outweighs cost sacrifice.	Yes **C 5.2**

[36] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[36]***	***Benefit in Impact Reduction***	***Proportionality***	***Control Adopted***
volume/ concentration of hydrocarbons released to the environment.	hydrocarbon-containing elements can be flushed back to the riser platform. CS: Minor. Flushing may prolong the cessation of production required for subsea IMMR activities, leading to reduced production.			
Monitoring subsea control fluid use, investigate material discrepancies, and using control fluid with dye marker to support identification of potential integrity failures.	F: Yes. The use of control fluid is monitored to maintain adequate fluid in the system. CS: Minimal cost.	Limits the volumes of subsea control fluid discharged to the marine environment.	Benefit outweighs cost sacrifice.	Yes **C 5.3**
Implement Woodside Engineering Operating Standard – Subsea Isolation). Proven isolation in place for relevant IMMR activities.	F: Yes CS: Minimal cost. Standard practice.	Maintaining and testing the ability to isolate wells and pipelines will ensure barriers are in place and verified limiting the volume of hydrocarbon released.	Control is a WMS requirement – must be adopted.	Yes **C 5.4**
Professional Judgement – Elimination				
None identified.				
Professional Judgement – Substitution				
Installing closed-loop subsea valve control system.	F: Yes. Closed-loop subsea valve control systems can be installed; however, they may not perform as quickly/reliably as open-loop systems. CS: Significant. The design, procurement and retrofitting of a closed-loop	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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[36]***	***Benefit in Impact Reduction***	***Proportionality***	***Control Adopted***
	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.			
Professional Judgement – Engineered Solution				
Routing 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 on-board support 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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[36]***	***Benefit in Impact Reduction***	***Proportionality***	***Control Adopted***
Decreasing the frequency of valve actuation.	F: Yes. However, decreasing the frequency of valve actuation may adversely impact the safe functionality and reliability of valves. Reducing the performance of subsea valves may introduce operability impacts, and increased safety and environmental risk associated with loss of containment events. CS: Minimal cost.	The potential consequence of the discharges is ranked as incidental, based on the volume, frequency, location and types of fluid discharged in an open-ocean environment, and reducing the number of discharges would provide little or no environmental benefit.	Decreasing the frequency of valve actuations would lead to a potential decrease in safe functionality and reliability of valves. When considering the potential safety and environmental risks from such a performance degradation, along with the minor impact from the release of control fluids, the cost of decreasing the frequency of valve actuations is considered to be 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 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, hydrocarbon and chemical discharge is not anticipated to result in a potential impact greater than slight and short-term effects on water quality, marine sediment or ecosystem habitat. Discharges from subsea control and IMMR activities are highly unlikely to mix with other marine discharges from the platform and vessels, so cumulative impacts are not anticipated. 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 MCs For NRC Operations			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
EPO 5 Limit adverse water quality impacts to 'Slight, short-term impact'[37] from hydrocarbons and chemicals used in subsea activities during the Petroleum Activities Program.	**C 5.1** Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • If chemicals with a different OCNS rating, sub-warning or non- CNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	**PS 5.1** All operational chemicals intended or likely to be discharged to the marine environment 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 5.1.1** Records demonstrate the chemical selection, assessment and approval process for operational chemicals is followed.
	C 5.2 Subsea infrastructure flushed where practicable during IMMR disconnection activities to reduce volume/ concentration of hydrocarbons released to the environment.	**PS 5.2** Subsea infrastructure containing hydrocarbons flushed to facility (where practicable) to a hydrocarbon concentration where further dilution provides disproportionate cost to environmental benefit, prior to disconnection.	**MC 5.2.1** Records demonstrate subsea infrastructure flushing (to facility) where practicable.
	C 5.3 Monitoring subsea control fluid use, investigating material discrepancies to support identification of potential integrity failures.	**PS 5.3** Subsea control fluid use monitored and, where losses are unexplained, potential integrity issues are investigated.	**MC 5.3.1** Records demonstrate subsea control fluid use is documented, and unexplained discrepancies investigated.
	C 5.4 Implement Woodside Engineering Operating Standard – Subsea Isolation. Proven isolation in place for relevant IMMR activities.	**PS 5.4** Proven isolation in place in compliance with Woodside Engineering Operating Standard – Subsea Isolation.	**MC 5.4.1** Records demonstrate that there was a proven isolation in place as required.

[37] *Defined in **Section 2.6.3**.*

6.6.5 Routine and Non-routine Discharges: Produced Water

Context		
Produced Water System – **Section 3.7.3** Platform Well Management and Maintenance Activities – **Section 3.11.2**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5**	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-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Discharge of produced water during routine and non-routine operations.		✓	✓		✓	✓	✓	B	E	-	-	LCS GP PJ RBA	Broadly Acceptable	**EPO 6**

Description of Source of Impact

Produced water (PW) is condensed water (water vapour present within gas/condensate that condenses when brought to the surface) or formation water (derived from a water reservoir below the hydrocarbon formation), or a combination of both. Separation of water from reservoir fluids is not 100% effective and therefore, PW often contains small amounts of naturally occurring contaminants including dispersed oil, dissolved organic compounds (aliphatic and aromatic hydrocarbons, organic acids and phenols), inorganic compounds (e.g., soluble inorganic chemicals or dissolved metals) and residual process chemicals (including MEG on a non-routine basis). A description of the PW system has been provided in **Section 3.7.3**.

In 2023, approximately 947 m^3/day of PW was discharged from NRC. PW discharge rates are expected to increase as the field ages with a maximum daily discharge of 1,900 m^3/day (integrity limit); however, based on historical discharge rates actual discharge rates are expected to be lower. Note that if no PW is discharged; this impact and associated requirements would cease (**Section 3.7.3**.). Potential environmental impacts of discharged PW include changes in water quality, sediment quality and biota potentially reducing ecosystem integrity.

Monitoring and Management Framework

Overview

This section describes the monitoring and management framework which Woodside has developed to support the monitoring of PW discharges from offshore assets. The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) have been implemented and are consistent with the principles of the National Water Quality Management Strategy.

Environmental values are defined as particular values or uses of the environment that are important for a healthy ecosystem or for public benefit, welfare, safety or health and that require protection from the effects of pollution, waste discharges and deposits (ANZG, 2018). The relevant environmental values considered are:

- ecosystem integrity – maintaining ecosystem processes (primary production, food chains) and the quality of water, biota and sediment.
- cultural and spiritual – in the absence of any specific environmental quality requirements for protection of this value, it is assumed that if water quality is managed to protect ecosystem integrity, this value is achieved in line with the guideline. The link between environmental protection and cultural heritage protection is described further in **Section 4.9**.

The relationship between key elements of ecosystem integrity, indicators and relevant monitoring activities undertaken on a routine and non-routine basis are shown in **Figure 6-1**. As per the State waters Technical Guidance: Protecting the quality of Western Australia's marine environment (EPA, 2016)[38] key elements to maintain ecosystem integrity have been identified as water quality, sediment quality and biological indicators (biota). By limiting the changes to these key elements to acceptable levels there is high confidence ecosystem integrity is maintained. Monitoring changes in water quality as well as investigating potential toxicity via whole effluent toxicity (WET) testing and implementing management to maintain acceptable levels of change is standard industry practice in Commonwealth and State waters. The relevant indicators to understand changes in key elements and therefore potential for impact to ecosystem integrity are physio-chemical stressors, toxicants in water and biological indicators. Guideline values for each indicator have been defined and are monitored to detect changes. Guideline values serve as an early warning that potential changes may occur.

The approved mixing zone protects 99% of species, as calculated using the ANZG (2018) statistical distribution methodology on the results of direct toxicity assessment using sub-lethal chronic endpoints. The protection of 95% of species guidelines have been adopted for a slightly to-moderately disturbed system at the approved mixing zone boundary given the discharge location (as per ANZG, 2018). The approved mixing zone boundary for NRC is 300 m. The justification for these limits of change being 'acceptable' is provided in the impact assessment section below.

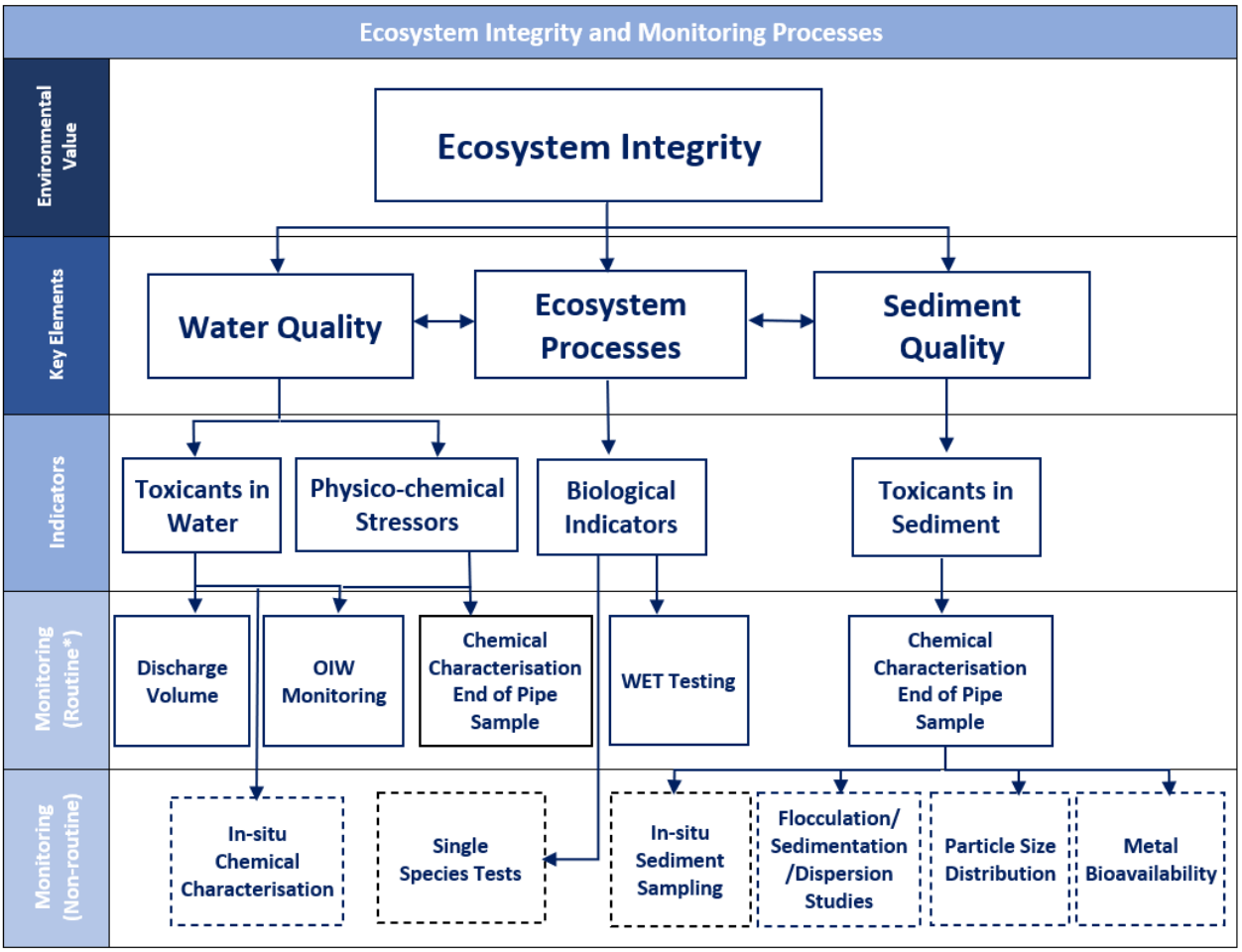


Figure 6-1: Ecosystem integrity and monitoring process

[38] In the absence of any Commonwealth guidelines, the State waters Technical Guidance: Protecting the quality of Western Australia's marine environment (EPA, 2016) has been considered and is consistent with the principles of the National Water Quality Management Strategy.

Operational Monitoring

Oil in water (OIW) is monitored during routine operations via an online analyser. Online analyser information is sent via transmitter and reported to the NRC control system (DCS) and is also captured within the process historian database (PHD). The DCS facilitates visibility in the NRC control room, for manual or automated process control changes to be made, and/or alarms enunciated (e.g., high OIW specification). PHD information is available onshore for analysis and trending. The results of manual sampling while the analyser is not available, are stored in a spreadsheet contained on the NRC server.

Routine Monitoring

PW is monitored and managed in accordance with the Offshore Marine Discharges Adaptive Management Plan (OMDAMP). The OMDAMP details routine monitoring, assessment against guideline values, analytical methods, and actions when a guideline value is exceeded. The OMDAMP is reviewed annually and updated to reflect new methods and adaptive management. Any changes in the OMDAMP are subject to the Change Management requirements.

The guideline values are applied through a risk-based approach that is intended to capture uncertainty around the level of impact by staging monitoring and management responses according to the degree of risk to ecosystem integrity. The approach provides a level of confidence that management responses are not triggered too early (i.e., when there is no actual impact) or too late after significant or irreversible damage to the surrounding ecosystem (EPA, 2016). Routine monitoring applicable to the facility, is undertaken to compare against guideline values (described in **Table 6-8**). Unacceptable changes in water quality and raw PW toxicity can be detected early and can indicate the potential for an impact to biota and sediment prior to it occurring. Whole Effluent Testing (WET) testing confirms if there is a potential for impact on biota. It is not appropriate to monitor for changes in species composition, diversity, etc, as there are limited receptors in the direct impact zone (a surface buoyant plume), and such changes may be detected after an impact occurs, and therefore are not considered appropriate for early detection. PW samples should represent normal operations and be undertaken during periods of normal production at the facility. Where practicable, samples are taken soon after new wells are brought online or after wells cut water.

The WET tests are undertaken on a broad range of taxa of ecological relevance for which accepted standard test protocols are well-established. WET tests are mainly focused on the early life stages of test organisms, when organisms are typically at their most sensitive to contaminants are designed to represent local trophic level receptors. Mainly tropical Australian marine species were selected based on their ecological relevance, known sensitivity to contaminants, availability of robust test protocols, and known reproducibility and sensitivity as test species. The dilutions required to protect 95% of species, is calculated using the Warne *et al*. (2018) methodology.

Table 6-8: Trigger values and frequency of routine monitoring

Parameter	Guidelines	Frequency
Review of continuous operational OIW monitoring results	Increase in the average monthly OIW concentration by 5 mg/L for more than six consecutive months or by 10 mg/L for two consecutive months.	Monthly
Chemical characterisation: end of pipe sample – physio chemical and toxicants	Results that are predicted to be higher than the 99% species protection trigger value at the approved mixing zone boundary and are above the results from the earlier toxicity year	Annually, during routine operations
WET testing	The 95% species protection safe dilutions derived from the WET testing species sensitivity distributions are not predicted to be achieved at the boundary of the approved mixing zone and are higher than previous years.	Three yearly, conducted in parallel with annual chemical characterisation
Discharge Volume	Mean discharge rate (m^3/day) exceeds maximum modelled for defined approved mixing zone.	Monthly volume review

Note: earlier toxicity year means the year in which the most recent WET test occurred.

If a trigger value is exceeded, there is uncertainty around whether the environmental value is being protected and further investigation is required (**Figure 6-2**).

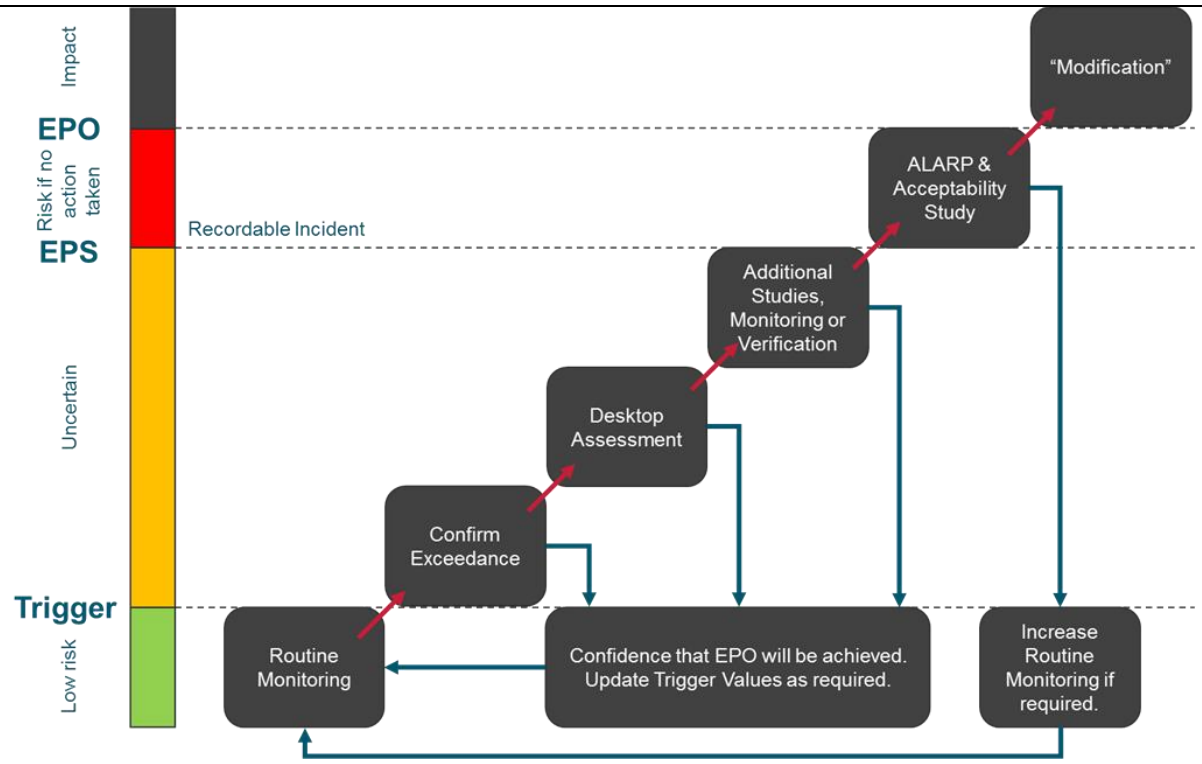


Figure 6-2: Routine monitoring and adaptive management framework for produced water

Further Investigations

Detectable exceedances in guideline values may occur without impacting ecosystem integrity. To provide confidence that ecosystem integrity has been achieved, further investigation (as per OMDAMP) would be required in the form of a desktop study to initially assess the exceedance in context of available data (multiple lines of evidence) and confirm if there is potential for impact to the environmental value.

A range of methods can be used to detect guideline value exceedances (e.g., relative percentage difference, control charts, multivariate analysis, etc.) depending on the dataset available. An appropriate method is selected as described in the OMDAMP due to the variable nature of environmental data. If critical data are not available, the desktop study identifies potential data gaps and may recommend additional non-routine studies and/or monitoring to ensure the assessment is appropriately undertaken. The purpose of the 'further investigations' step is to provide certainty that the EPS has been achieved, if a guideline value has been exceeded. The key investigation steps are described are: Confirm the guideline value has been exceeded – Review quality assurance and quality control, methodology and possible sources of contamination to determine if the results are reliable, or if any factors have occurred that may compromise the integrity of the monitoring or data.

Desktop assessment to understand whether the EPS is at risk – If a guideline value is confirmed to be exceeded, multiple lines of evidence are considered including historical and current data from routine and non-routine monitoring and studies. This assessment shall consider whether there is adequate evidence to demonstrate that acceptability criteria have been met and ecological integrity is not at risk (EPS not breached). If the desktop assessment determines that the existing body of evidence is insufficient, it shall outline what additional monitoring or studies are required. The desktop assessment is needed before undertaking any additional infield monitoring. It ensures monitoring programs are designed and implemented to provide robust findings based on good survey design. Potential additional monitoring/studies may include but is not limited to:

- single species toxicity testing (collected annually in parallel with routine chemical characterisation should further investigation be required)
- WET testing
- dilution modelling and/or studies
- flocculation, sedimentation, settling velocity and/or dispersion analysis
- metal bioavailability
- scanning electron microscopy and particle size distribution analyses
- in-situ monitoring (water quality and/or sediments).

Routine monitoring activities may be required ahead of schedule and additional monitoring not listed may be undertaken as appropriate. Field monitoring is undertaken in accordance with a plan that details timing, locations and objectives of monitoring.

Conduct additional studies to confirm the EPS is not at risk – Monitoring results provide additional lines of evidence to determine whether there is a risk to ecosystem integrity due to unacceptable changes in water quality, sediment quality, or biological indicators. Given the significant health, safety and technical risks, logistics and planning required, monitoring of the receiving environment is typically only considered when all other sources of evidence are insufficient to demonstrate that ecological integrity is not at risk. The OMDAMP provides detailed guidance on the steps and actions required to be undertaken if a guideline value is exceeded and this may include additional non-routine monitoring to verify that ecological integrity is maintained.

If environmental impact is deemed to be within acceptable limits of change the desktop assessment may consider a review of guideline values to ensure they are appropriate. If the environmental impact is deemed to be outside of the acceptable limits of change, an ALARP/Acceptability study is required to determine what additional controls can be implemented to ensure the impacts are acceptable. An EPS breach is a Recordable Incident, which is reported and managed as outlined in **Section 7.11.5**.

ALARP/Acceptability Study

An ALARP/Acceptability study is conducted once it has been determined, as a result of further investigations, that there is potential for an impact which exceeds the acceptable limits of change. The ALARP/Acceptability study shall be conducted in accordance with the ALARP Demonstration Procedure to determine additional controls that may be necessary to reduce the potential impacts. Additional management measures (controls) may include technology or process upgrades or reservoir management. Woodside will implement the additional controls identified in the ALARP/Acceptability study, which are required to give confidence that the acceptable limits on environmental impact can be achieved. Field validation of model assumptions, and additional monitoring to assess whether impacts have been realised using a gradient monitoring design will be considered.

Impact Assessment – Routine PW Discharge

Potential impacts of PW discharge include:

- changes to water quality
- toxicity to biota
- changes to sediment quality.

To understand potential impacts from PW discharges, Woodside has undertaken a suite of comprehensive in-situ testing and sampling representing long-term operational periods from its offshore production facilities. The details of this testing and resultant understanding of potential environmental impacts are outlined below.

Potential Impacts to Water Quality

Produced water is discharged from the platform directly overboard above the sea surface (17 m above LAT) or via the drain sump caisson below the water line (40 m below LAT). The plume initially plunges and then rises to the surface as positively buoyant plume. Potential impacts to water quality have been assessed through monitoring discharge volumes, dispersion modelling to determine dilutions within the mixing zone, field verification monitoring and chemical characterisation of the PW.

Discharge Volumes

The average daily volume of PW discharged from the facility for each year is lower than the maximum design capacity of the PW system on the NRC (1,900 m^3/day). Future discharges may increase slightly as the field ages but are expected to remain in line with historical discharge rates over the next five years.

OBJ

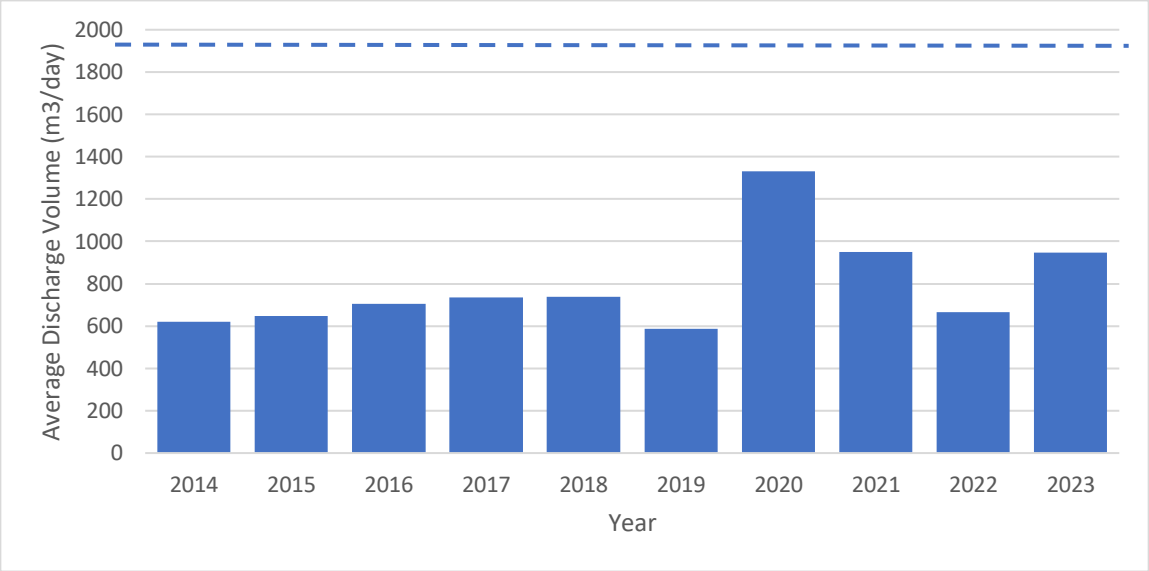


Figure 6-3: Historic average daily discharge rates of produced water from NRC facility

Chemical Characterisation of PW (Physio-chemical and Toxicants in Water)

Historic monitoring indicates the approved mixing zone has not been exceeded and provides high confidence that impacts from PW discharge are highly localised and pose negligible effects to environmental receptors (BMT Oceanica 2015; BMT 2023). Samples of undiluted PW collected annually from the end of pipe between 2011 to 2023 were analysed for key physio-chemical parameters and toxicants. In most cases, the end of pipe results are either low or below guideline values resulting in achieving the guideline values within the approved mixing zone of 300 m taking into account modelled dilutions.

Low concentrations of metals, BTEX, PAHs, phenols and organic acids are present at levels above the guideline values at the end of the pipe but are easily diluted to achieve the 99% species protection level well before the mixing zone boundary (BMT, 2023). To achieve the 99% species protection guideline values, the highest dilution required to date was 844 for 2Methylphenol. Modelling completed in 2020 predicts 3,743 and 15,015 dilutions were achieved 300 m from discharge point at the maximum discharge rate (1,900 m^3/day) and 2020 average discharge rate (1,325 m^3/day) respectively. Routine chemical characterisation from 2014-2023 has indicated a relatively stable discharge with no additional non-routine monitoring having been triggered.

PW may include low levels of naturally occurring radionuclides (NORMs) in particular, uranium 238 and thorium 232 decay chains and the longer-lived radionuclides lead 210, polonium 210, radium 226 (Ra-226) and radium 228 (Ra-228) (Coleman and West, 2000). These radionuclides can occur in produced water either in solution or as fine mineral suspended solids (OSPAR Commission, 2009).

Valeur and Petersen (2013) assessed the ecological hazard related to NORMs in PW discharged to the marine environment. They concluded that NORMs have a strong affinity for particulate matter and discharged NORMs would be adsorbed onto fine grained sediments and particulate matter relatively soon after introduction to the marine environment. In high energy environments, NORMs associated particles would settle and resuspend numerous times until they eventually settle in low energy environments in deep parts of the sea that serve as accumulation areas for fine grained sediments. Over time these particles would be buried beneath the benthic mixing layer of the seabed where they will become isolated from the biosphere and are unlikely to exceed background levels.

Given the low concentrations of radionuclides and its adsorption to fine grained sediments no further investigation or analysis will be undertaken as the approved 300 m mixing zone is deemed appropriate. Potential toxicity risk would be accounted for during regular WET testing to determine PW toxicity.

Toxic additives which may be present within the PW discharge stream include scale inhibitors, biocides, corrosion inhibitors and a range of other production chemicals. Dosage concentrations are based on production process requirements. Monitoring and performance of chemical application is completed in line with the Woodside chemical

ALARP assessment. This covers recommended application rates, key performance indicators and monitoring requirements.

There is potential for a minor, localised decrease in water quality at the discharge location within the mixing zone and limited adverse effects on marine biota. Within the approved mixing zone, impacts to pelagic fish are expected to be limited to avoidance of the localised area of the plume and short-term, localised decline in planktonic organisms in the immediate vicinity of the discharge plume.

Potential Impacts to Biological Indicators

Most treated PW has low to moderate toxicity (Neff *et al*., 2011), with actual toxicity of discharge dependant on the chemical constituents of the PW, any added process chemicals, the level of treatment, dilution with cooling water prior to release, and the dilution of the discharge as it mixes with the receiving seawater. Most hydrocarbons in PW are considered non-specific narcotic toxins with additive toxicities; therefore, the toxicity of a PW does, in part, depend on the total concentration and range of bioavailable hydrocarbons (Neff, 2002). Potential impacts of PW to biological indicators have historically been assessed through WET testing and dilution modelling to verify the approved mixing zone is achieved.

WET Testing

WET testing has been undertaken to account for interactions between toxicants and consider toxicants which cannot readily be measured or are not known to be present in the sample. Routine WET testing was completed in 2011, 2014, 2017, 2020 and 2023 (**Table 6-9**). A range of mainly tropical Australian marine species were selected based on their ecological relevance, known sensitivity to contaminants, availability of robust test protocols and known reproducibility and sensitivity as test species. Upon completion of WET testing, the results are input into Burriloz (or equivalent) species sensitivity distribution (SSD) curves to determine safe dilution estimates for the of 99 and 95% species protection. The number of dilutions required to achieve 99% species protection level safe dilutions has fluctuated over the years with a large increase in 2017 before concentrations decreased. This increase in 2017 is likely driven by a known poor fit of the species sensitivity distribution model (for 99%) at the low concentration ranges which requires careful interpretation of the results (Batley *et al*., 2018). Toxicity was determined to not be significantly different using control charts based on the 95% species protection level and chemical characterisation data. Safe dilutions required to achieve 99% species protection levels (PNEC) are achieved well before the mixing zone boundary in all historic monitoring.

Table 6-9: Calculated guideline values (SSD) and safe dilutions required to achieve predicted no effect concentrations (PNEC)

Species Protection Level	**Guideline Value (Safe dilutions to achieve Predicted No Effect Concentrations (PNEC))**				
Year	***2011***	***2014***	***2017***	***2020***	***2023***
PC99 (50)	0.12 (1:830)	0.21 (1:480)	0.032 (1:3,130)	0.15 (1:667)	1.6 (1:63)
PC95 (50)	0.17 (1:590)	0.35 (1:290)	0.21 (1:470)	0.23 (1:435)	2.3 (1:44)

Determination of Approved Mixing Zone

To determine the potential impact of the PW to the marine environment, modelling has been conducted to predict the distance at which 99% species protection level safe dilutions are achieved, using the most recent WET testing results available at the time to reflect the current potential toxicity (**Table 6-9**). The latest modelling study was carried out in 2021 and informs this impact assessment (BMT, 2021a).

Model simulations were undertaken for the three main seasons prevalent on the NWS, based on measured current and wind data supplied by Woodside. Ocean current data was collected at multiple depths through the water column near NRC. As the modelling of ocean current speed and direction varies substantially within each season, the full current records were analysed to select periods typical of the three seasons on the NWS but using the side of low current speeds to give conservative model results (BMT, 2021a). Further to these hydrodynamic inputs, the PW discharge model was validated in 2006 using the results from a dye dispersion study (Oceanic Field Services, 2006) undertaken from the North Rankin A platform. The predicted plume dilutions reasonably matched those measured.

The results from the WET testing undertaken in 2020 were used to develop predicted no-effect concentration (PNEC) values that were inputs to the model. The four-day predicted effects concentration (PEC) value is used to determine the PEC/PNEC ratios and the distances from the discharge point at which 99% species protection level safe dilutions are achieved, based on the 2020 average discharge rate (1,325 m^3/day) and maximum discharge rate (1,900 m^3/day). The modelling shows a surface buoyant plume that is readily diluted to 99% species protection levels within 300 m of the discharge location under worst-case conditions at actual and maximum discharge rates. Water quality surveys in 2022 found no exceedances of any parameter (BMT, 2023), which verifies the modelled rapid dispersion of the PW discharge. The approved mixing zone boundary was derived using 2017 WET testing results as the worst case

scenario (Table 6-9) with a 50 m buffer. The 300 m approved mixing zone boundary is adequate to achieve the required safe dilutions to meet the 99% species protection levels at maximum discharge volumes of 1,900 m^3/day.

Bioaccumulation

Bioaccumulation refers to the amount of a substance taken up by an organism through all routes of exposure (water, diet, inhalation, epidermal). PW may contain BTEX, metals, NORMs, PAH and phenols which may potentially bioaccumulate in biota.

The most comprehensive field study assessing bioaccumulation of hydrocarbons and metals from PW discharged into offshore waters is that by Neff *et al*. (2011). At the request of the U.S. Environmental Protection Agency (USEPA), the Gulf of Mexico Offshore Operators Committee sponsored a study of bioconcentration of selected PW chemicals by marine invertebrates and fish around several offshore production facilities, discharging more than 731 m^3 per day of PW to outer continental shelf waters of the western Gulf of Mexico (by comparison, NRC discharges are currently around 947 m^3/day). The target chemicals identified by USEPA included five metals (As, Cd, Hg, ^{226}Ra and ^{228}Ra), three volatile Monocyclic Aromatic Hydrocarbons (MAH), benzene, toluene, and ethylbenzene, and four semi-volatile organic chemicals (SVOC), phenol, fluorene, benzo(a)pyrene, and di (2-ethylhexyl) phthalate (DEHP). Additional MAH (m-, p-, and o-xylenes) and a full suite of 40 parent and alkyl-PAH and dibenzothiophenes were also analysed by Neff *et al*. (2011) in PW, ambient water and tissues at some platforms.

Concentrations of MAH, PAH and phenol as determined by Neff *et al*. (2011) were orders of magnitude higher in PW than in ambient seawater. There was no evidence of MAH or phenol being bioconcentrated. All MAH and phenol were either not detected (> 95% of tissue samples) or were present at trace concentrations in all invertebrate and fish tissue samples. Concentrations of several petrogenic PAHs, including alkyl naphthalene's and alkyl dibenzothiophenes, were slighter, but significantly higher in some bivalve molluscs but not fish, from discharging than from non-discharging platforms. These PAH could have been derived from PW discharges or from tar balls or small fuel spills. Concentrations of individual and total PAH in mollusc, crab and fish tissues were well below concentrations that might be harmful to the marine animals or to humans who might collect them for food at offshore platforms (Neff et. al. 2011).

The average concentration of BTEX in PW discharged from the NRC facility is 32 mg/L (Advisian, 2024). Bioaccumulation of BTEX compounds has been observed to occur in the laboratory, but only at concentrations far in excess of that discharged from the NRC (for example refer to Berry 1980); hence, it is unlikely BTEX would bioaccumulate at the exposure concentrations that may be experienced by biota around the NRC.

In contrast to BTEX compounds, PAH (polycyclic aromatic hydrocarbon) compounds have high log pow values indicative of the potential for bioaccumulation (Vik *et al*. 1996). Neff and Sauer (1996) reviewed the available literature for laboratory and field studies investigating the bioaccumulation of PAHs. The bioaccumulation values for PAHs in marine organisms collected near PW discharges in the Gulf of Mexico, reported by Neff and Saur (1996), indicate that the highest bioaccumulation factor was in the tissues of bivalve molluscs and the lowest in the muscle tissue of fish.

Bioaccumulation is unlikely to result in increased levels of BTEX in biota surrounding NRC; however, there may be an elevation in PAH levels. The results from Neff *et al*. (2011) can be used to infer the very low potential for adverse bioaccumulation effects to marine organisms, or to humans, if they were to consume any affected fish, molluscs or crabs found on upper near surface legs of the facility.

The potential environmental impact associated with bioaccumulation of PW constituents in the water column and in the sediments, is considered to be very low, and limited to a potential localised effect on a small number of non-threatened species in waters immediately surrounding the facility as described. Potential health risks are unlikely as a result of negligible exposure: the PSV prohibits fishing from or near the riser platform as there is very little or no activity within the Offshore Facility Operational Area. The findings of the Routine Sediment Sampling Analysis and Water Quality Monitoring field studies completed in 2022 at NRC (BMT, 2023) confirms the minimal environmental impact from PW discharge. Given the nature of the PW discharge from the riser platform, the potential for bioaccumulation of PW contaminants (in particular BTEX) is considered to be minimal and highly localised.

Impacts to Australian Marine Parks, KEFs and Biologically Important Areas

The offshore facility overlaps the Ancient Coastline 125 m Depth Contour, but as PW forms a buoyant plume which does not reach the KEF depth, no contact and therefore no change in water quality at the KEF is expected from the plume. Other KEFs and protected areas, including the Glomar Shoals and the Montebello Marine Park are approximately 45 km and 57 km from the discharge point respectively, however plumes are expected to disperse well before reaching these receptors.

Given the distance from the discharge source no impacts to the adjacent sensitive receptors (**Section 4**) are anticipated. Routine monitoring (end of pipe chemical characterisation and WET testing) detects changes at the approved mixing zone boundary. If guideline values are predicted to be exceeded at this distance further investigation is required as described above. This may include a review of single species toxicity test results, additional WET testing or in situ monitoring. If guideline values are not exceeded there can be high confidence that maximum ecological protection is achieved by the Marine Park.

The approved mixing zone is within the BIA pygmy blue whale migration corridor (northern migration April to August; southern migration October to January) from Indonesian Waters to southwest Australia and BIA foraging for whale sharks along the 200 m isobath, with seasonally high use (April–June). The pygmy blue whale migration is thought to follow deep oceanic routes (DEWHA, 2008). In the NWMR, pygmy blue whales migrate along the 500 m to 1000 m depth contour on the continental slope where they are likely to opportunistically feed on ephemeral krill aggregations (DEWHA, 2008). Given the water depths in the approved mixing zone are approximately 125 m and that PW forms a surface buoyant plume, impacts are not expected to this value. This assessment is consistent with the blue whale recovery that also identifies chronic chemical pollution (toxins) as unlikely to impacts pygmy blue whales and a low risk (DoE, 2015). The 200 m isobath is located about 27 km outside the approved mixing zone. Given the localised area of impact and that whale sharks are only transiting the area, no impacts are expected.

Potential Impacts to Sediment Quality

Potential impacts to sediment quality were assessed through sediment surveys and supported by the results of flocculation studies and potential impacts to water quality.

Toxicants in Sediments

Accumulation of PW contaminants in sediments depends primarily on the volume/concentration of particulates in PW discharges or constituents that sorb onto seawater particulates, the area over which those particulates could settle onto the seabed (dominated by current speeds and water depths) and re-suspension, bioturbation and microbial decay of those particulates in the water column and on the seabed. As described above, the potential for PW to impact sediment, based on chemical characterisation, is unlikely due to the concentrations observed.

The plume is buoyant, due to lower salinity and/or higher temperature than surrounding seawater. Therefore, potential contaminants in the PW discharge may be introduced into sediments around the riser platform through precipitation of soluble contaminants and flocculation and sedimentation of the particles in the PW plume. Studies into potential sediment accumulation from PW discharge have been undertaken by Woodside, including analysis of a sample of PW from the facility (Jacobs 2016; BMT 2021b). The study found that the PW at NRC has very small amounts of solid material (<2.5 mg/L) and very limited amounts of precipitation of PW particulates occurred with seawater. Due to the small particle sizes (100% particles <40 µm) there is very little potential of sedimentation and it is unlikely that the PW will flocculate when mixed with seawater.

Dr Graeme Hubbert categorised particulate behaviour based on oceanographic experience and mathematical calculations using settling rates and resuspension velocities for various particle sizes. He determined that particles of a size 1 to 5 µm would never permanently settle out of the water column, and that particles of a size 5 to 40 µm would not permanently settle out of the water column, unless they were in very deep water (>5000 m) or in areas where hydrodynamic conditions were very weak and did not continuously resuspend the particles (SKM, 2013). All particles in NRC PW were smaller than 40 µm (Jacobs 2016), therefore, have little chance of settling within the dynamic open ocean environment surrounding the facilities.

In 1991 and 2006 sediment sampling was conducted at NRA to investigate impacts of historical water based and non-water-based drilling muds on sediment quality (SKM 2006). The 2006 sampling program found historical contamination with elevated levels of TPH, arsenic, barium, lead, mercury and zinc, 100 m away from the platform, which decreased with distance. Levels of hydrocarbons had greatly reduced in the sediments since 1991. Opportunistic sediment sampling was also undertaken by Jacobs in 2013, as part of the Persephone development. Findings were consistent with sampling completed in 1991 and 2006 with elevated levels of barium, mercury and lead found within approximately 100 m. However, elevated levels of TPH and arsenic were no longer observed. The historical contamination at NRC makes it difficult to ascertain if PW is contributing to elevated levels of lead, mercury and zinc but given the concentration are lower than or similar to historical data and the concentrations observed in PW chemical characterisation (lead is consistently below the limit of detection) it is highly unlikely elevated levels are due to PW.

Historically potential for PW to impacts to sediment quality have been managed by comparing the NRC relative to other nearby facilities (GWA) which also has historical contamination. It was considered impacts are likely to be detected at facilities with a greater volume of PW with a higher concentration and volume of toxicants in similar water depth and currents. However, to investigate uncertainty a non-routine sediment sampling event was conducted to ascertain if impacts to sediment quality outside of the approved mixing zone had occurred prior to 2022 in accordance with the previously approved EP.

Results from the 2022 sediment sampling campaign at NRC found concentrations of contaminants (hydrocarbons, total metals, organic acids) in surface (top 2 cm) sediment samples were all below their respective ANZG (2018) default guideline values (DGVs), indicating a high level of ecological protection is achieved within the approved 300 m mixing zone boundary. In fact, no measurable concentrations of hydrocarbons were found in surface (top 2 cm) samples, suggesting that there has been no accumulation of hydrocarbons in these sediments. Additionally, hydrocarbons (TRH, BTEX and phenols) and metals in deeper sediment layers (2-10 cm and 10-30 cm) were all below their respective ANZG (2018) DGVs (BMT, 2023).

Impacts to sediment quality are expected to be minimal and limited to a localised area based on the low concentrations of toxicants in the chemical characterisation, low levels of solid particles in PW, limited precipitation and/or flocculation from PW when mixing with seawater and sediment monitoring results to date.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/ Sacrifice (CS)[39]***	***Benefit in Impact/ Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
None identified.				
Good Practice				
Implement Woodside's Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • If chemicals with a different OCNS rating, sub warning or nonOCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	F: Yes. Routinely implemented to the chemical selection process for Woodside facilities. CS: Minimal cost. Standard practice.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Benefits outweigh cost/sacrifice.	Yes **C 5.1**
Monitoring of OIW concentrations in accordance with PARCOM 1997/16 Annex 3 methodology: • During routine operations limit average PW OIW to less than 30 mg/L 24 hr rolling average. • During non-routine operations (startup) activities, limit PW OIW to less than 100 mg/L 24 hr rolling average, for	F: Yes. CS: Monitoring and implementation costs. Standard practice. The 30 mg/L 24-hour rolling average limit proposed is a legacy of the former Environment Regulation 29 and 29A repealed in 2014. Reduction of this limit is not	Limiting OIW concentrations within PW reduces impacts to the environment.	Benefits outweigh cost/sacrifice. The adoption of a limit allows for PW OIW to be controlled. A separate limit for non-routine activities provides a proportional approach to enable start up or restart of wells, assist in ongoing OIW management while facilitating impacts are of short duration, localised and temporary.	Yes **C 6.1**

[39] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/ Sacrifice (CS)[39]***	***Benefit in Impact/ Risk Reduction***	***Proportionality***	***Control Adopted***
the first 10 days from initial start-up of each zone (two reservoir zones). • During non-routine production restart activities, limit PW OIW to less than 100 mg/L 24 hr rolling average, for up to 3 days for the restart of the wells and a 30 mg/L monthly rolling average.	considered feasible or practicable. The current limit is effective in managing potential impact of PW discharge. Based on benchmarking against other Australian operations 100 mg/L rolling 24-hour averages have been used for periods of between 33 and 60 days during initial commissioning periods.			
Continuous reservoir management, i.e. changing the relative contribution to facility production of each well to maintain OIW concentrations below Performance Standard.	F: Yes CS: Monitoring and implementation costs. Standard practice.	Continuous reservoir management is a contingency measure to ensure that rolling 24 hr period limits are not exceeded, even if a temporary spike in OIW concentration occurs.	If the facility exceeds 30 mg/L (or 100 mg/L during non-routine activities) for a short period which places the rolling 24 hr period limit at risk, the facility is able to change the relative production from each well, i.e. by temporarily decreasing production from high water cut wells, to ensure a breach of the OIW limit does not occur. This control achieves the same performance standard as the monitoring of OIW concentrations control.	Yes **C 6.2**
Monitoring routine and implementation of the Adaptive Monitoring and Management Framework for PW discharges including: • monitoring of PW discharge volume • chemical characterisation • WET testing • timing of annual/ triennial sampling to be representative	F: Yes. CS: Monitoring costs. Standard practice.	The OMDAMP provides for detection of significant changes to the PW discharge characteristics (i.e., volumes, OIW concentration, chemical characterisation) that may cause an increased impact or risk to the marine environment. Monitoring is designed to detect if 95%	Woodside has developed the OMDAMP based on operational experience from relevant offshore assets. The OMDAMP considers risk-based adaptive management measures.	Yes **C 6.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/ Sacrifice (CS)[39]***	***Benefit in Impact/ Risk Reduction***	***Proportionality***	***Control Adopted***
aiming to detect change, considering when the reservoir cuts formation water.		species protection is achieved at the approved mixing zone boundary. Through the implementation of the OMDAMP, potential risks to the environment are reduced.		
Online monitoring and/or procedural controls in place to monitor and control PW OIW concentrations and prevent discharge of PW with high OIW concentrations. Process performance monitored by OIW concentration analyser. Conduct manual sampling on a six-hourly basis when online analyser is unavailable where safe and practicable to do so.	F: Yes. CS: Minimal cost. Standard practice.	The OIW analyser provides optimal process control and safeguarding to monitor, control and prevent discharge of PW with high OIW concentration to the environment. Monitoring of OIW concentrations when online analyser unavailable when safe and practicable to do so.	Online monitoring control is WMS requirement – must be adopted.	Yes **C 6.4**
The online analyser is calibrated with a manual sample in accordance with Offshore Laboratory Determination of Oil in Water Standard Operating Procedure.	F: Yes. CS: Monitoring and implementation costs. Standard practice.	Calibration of equipment to maintain quality control.	Calibrations undertaken at appropriate frequency to maintain quality control and in line with procedures.	Yes **C 6.5**
Professional Judgement – Eliminate				
Reinjecting PW into reservoirs.	As part of the 2015 PW study into treatment, Woodside examined the potential for reinjection of PW at similar NWS facilities. Woodside has not identified a suitable reservoir, and such an option would likely require additional drilling activities to be undertaken. Reinjection is not feasible unless a suitable reservoir is identified. It is not feasible to reinject into a shut-in platform well because the wells continue to have very high reservoir pressure, which would require significant facility modifications to overcome. Drilling and Subsea work activities to establish a reliable PW reinjection well and subsea infrastructure also introduce significant complexity, risk and cost. Retrofitting PW topsides reinjection equipment to NRC introduces significant modifications which pose safety risks on an operational gas facility. Together the significant retrofit risks, associated environmental impact (drilling and subsea construction) and introduced health and safety risks are considered significantly disproportionate to the potential slight environmental impact improvement. As such, no further engineering design or screening studies reporting is considered reasonably practicable.			No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/ Sacrifice (CS)[39]***	***Benefit in Impact/ Risk Reduction***	***Proportionality***	***Control Adopted***
	The reinjection of PW would also introduce additional sources of environmental risks and impacts, such as those associated with drilling injection wells (e.g. drill cuttings) and maintaining injection capability (e.g. increased greenhouse gas emissions from power generation for pumps, increased chemical usage, etc.). Given the localised, slight, non-significant impact of PW discharges, and the considerable costs involved in developing a PW reinjection capability for the NRC, implementation risks and environmental impacts (greenhouse gas, chemical use), the costs are grossly disproportionate to the potential environmental benefit gained.			
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
Chemical injection of water clarifier to reduce OIW concentration.	F: Potentially feasible. CS: Moderate. Initial cost of modifying production system to include chemical dosing point. Ongoing cost of chemical procurement.	Potential minor reduction in OIW concentration; however, does not reduce the overall consequence rating. Further, this results in additional chemical load, and lifecycle environmental footprint associated with packaging, logistics, waste management and potential process upsets.	The discharge of clarifying agent with the PW stream may result in additional toxic effects. Ongoing chemical consumption would also incur Operational expenditure (OPEX). Given the nature and scale of impacts forming the current PW discharge, the cost of developing a chemical injection is disproportional to the environmental benefit.	No
Adoption of a permanent tertiary treatment stage to reduce OIW concentration.	F: Potentially feasible. Large deck space would be needed which is not currently available. CS: Significant cost. Deck reinforcement or cantilevers required, as well as high cost associated with these maintenance intensive technologies.	Potential minor reduction in OIW concentration; however, does not reduce the overall consequence rating. Further, there is very little deck space available at NRC for additional treatment equipment.	Macro Porous Polymer Extraction (MPPE) are large and heavy, requiring deck reinforcement or cantilevers. They are also maintenance intensive. This introduces significant costs and additional risk from exposure of personnel. Additionally, these options tend to have high power consumption. The adoption of tertiary treatment is not currently considered ALARP because the additional costs and risks associated with this option are considered	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/ Sacrifice (CS)[39]***	***Benefit in Impact/ Risk Reduction***	***Proportionality***	***Control Adopted***
			disproportionate to the OIW benefit that is expected to be yielded.	
Professional Judgement – Procedures and Administration				
None identified				
Risk Based Analysis				
Application of Woodside's Risk Management Procedures and implementation of the OMDAMP ensures the routine assessment of PW impacts, identification of changes to discharges, systematic assessment of risks and ongoing assessment/monitoring of discharge streams to reduce risk to ALARP, that includes: • ongoing hazard identification, risk assessment and the identification of control measures • ongoing PW discharge monitoring.				
Company Values				
Corporate values require all personnel at Woodside to comply with appropriate policies, standards, procedures and processes while being accountable for their actions and holding others to account in line with Our Values. As detailed above, the Petroleum Activities Program is undertaken in line with these policies, standards and procedures that include suitable controls to manage PW discharge.				
Societal Values				
Due to the Petroleum Activities Program's proximity to sensitive receptors and potential uncertainty around PW discharges, the PW discharge consequence rating presents a Decision Type B in accordance with the decision support framework described in **Section 2.6.1**. Consultation was undertaken for this program to identify the views and concerns of relevant stakeholders, as described in **Section 5**. Woodside has sent an Activity Factsheet to all identified relevant stakeholders regarding the Petroleum Activities Program (**Section 5** and **Appendix F**); no specific concerns around PW discharge were identified through this process.				
ALARP Statement: On the basis of the environmental impact and 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 PW discharge. Woodside has undertaken risk-based analysis (PW discharge modelling) to inform the evaluation and assessment of environmental impacts and risks. Woodside also implements a risk-based adaptive OMDAMP. The outcomes of both the modelling studies and long-term monitoring have been considered in determining the ALARP position. As no reasonable additional/alternative controls are currently identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				
Demonstration of Acceptability				
To assess and determine the acceptable limits of impacts from PW discharges, Woodside has considered the following criteria, appropriate guidelines, principles of ESD, company values and societal values. <u>Other Requirements (includes Laws, Polices, Standards and Conventions)</u> The adopted controls and acceptability assessment has considered regulatory guidance, in particular WA EPA (2016) Technical Guidance: Protecting the Quality of Western Australia's Marine Environment and the ANZG (2018) guidelines. Both sources of Regulatory Guidance provide that environmental values should be identified and levels of ecological protection should then be set. To ensure ecosystem health is maintained overall, the cumulative size of the areas where lower levels of ecological protection apply should be proportionally small compared to the areas designated high and maximum. The ANZG (2018) guidelines similarly provide guidance that levels of protection should be identified, based on the environmental values to be protected. The Monitoring and Management Framework aligns to the levels of protection described by both WA EPA (2016) and the ANZG (2018) guidelines through the acceptable limits of change.				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/ Sacrifice (CS)[39]***	***Benefit in Impact/ Risk Reduction***	***Proportionality***	***Control Adopted***
The level of ecological protection provided to sensitive receptors is consistent with the North-west Network Management Plan (2018). By monitoring and managing to the 95% species protection safe dilutions 500 m, there can be high confidence that potential impacts can be detected and managed via the OMDAMP. Principles of Ecologically Sustainable Development Woodside has established several research projects to understand the marine environments in which we operate, notably in the Exmouth Region and the Kimberley Region, including Rankin Bank, Glomar Shoals, Enfield Canyon and Scott Reef. Woodside's corporate values require that we consider the environment and communities in which we operate when making decisions. Woodside looks after the communities and environments where we operate. Risks are inherent in petroleum activities; however, through sound management, systematic application of policies, standards, procedures and processes, Woodside considers that despite this potential impact, the extremely low impact of PW is acceptable. Internal Context The Petroleum Activities Program is consistent with Woodside corporate policies, standards, procedures, and processes as outlined in the Demonstration of ALARP and Environmental Performance Outcomes, including: • Woodside Environment and Biodiversity Policy • Woodside Risk Management Policy • Woodside Environmental Performance Procedure (that specifies maximum mixing zones and minimum sampling requirements). Woodside corporate values include working sustainably, with respect to the environment and communities in which we operate, listening to internal and external stakeholders (below) and considering HSE when making decisions. External Context Woodside recognises that its 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. External stakeholder consultation was undertaken with relevant stakeholders (**Section 5**), prior to the Petroleum Activities Program and feedback was incorporated into this EP where appropriate. There was no feedback from stakeholders relevant to PW. By providing PW monitoring and control measures that are commensurate with the risk rating, location and sensitivity of the receiving environment (including social and aesthetic values), Woodside believes this addresses broad societal concerns to an acceptable level. **Acceptability Statement:** Routine and non-routine discharges of PW have been evaluated as representing potential slight, localised, short-term impacts to water quality, marine sediment, and biota. As per **Section 2.6.1**, Woodside considers 'high order impacts' (Decision Type B impacts such as PW discharge) as acceptable if ALARP is demonstrated using good industry practice, consideration of company and societal values and RBA, if legislative requirements are met and societal concerns are accounted for, and the alternative control measures are grossly disproportionate to the benefit gained. In addition, acceptability is assessed against the above criteria. The adopted controls are considered good oil-field practice/industry best practice, are consistent with WA EPA (2016), ANZG (2018) and Woodside's internal requirements. Further opportunities to reduce the impacts have been investigated (refer ALARP demonstration) and considered to be grossly disproportionate to the benefit gained. The PW discharge would mix with sewage, grey-water and other low-volume, low-toxicity routine waste streams from the platform (described in Section 6.6.6) but would dilute well within the mixing zone boundary and cumulative impacts beyond this area are not anticipated. Woodside considers the adopted controls appropriate to manage the impacts of PW discharge to an acceptable level.				

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 6 No impact to ecosystem integrity from produced water outside of the Approved Mixing Zone boundary.	**C 5.1** Refer to **Section 6.6.4**	**PS 5.1** Refer to **Section 6.6.4**	**MC 5.1.1** Refer to **Section 6.6.4**
	C 6.1 Monitoring of OIW concentrations in accordance with PARCOM 1997/16 Annex 3 methodology. • During routine operations limit average PW OIW to less than 30 mg/L 24 hr rolling average. • During non-routine (well restart) activities, limit PW OIW to less than 100 mg/L (over a 24 hr period), for the first 7 days from initial start-up of each zone (two reservoir zones). • During non-routine production restart activities, limit PW OIW to less than 100 mg/L 24 hr rolling average, for up to 3 days for the restart of the wells and a 30 mg/L monthly rolling average.	**PS 6.1** For routine operations, OIW is limited to a 30 mg/L 24 hr rolling average. For non-routine commissioning (startup) activities, OIW is limited to 100 mg/L 24 hr rolling average, for the first 10 days from initial start-up. For non-routine production restart activities, OIW is limited to <100 mg/L 24 hr rolling average, for the 3 days at 30 mg/L monthly rolling average.	**MC 6.1.1** Records demonstrate during routine activities and non-routine activities OIW rolling average limits are not exceeded.
	C 6.2 Continuous reservoir management, i.e. changing the relative contribution to facility production of each well to maintain OIW concentrations below Performance Standard.		
	C 6.3 Implementation of the Adaptive Monitoring and Management Framework for Produced Water: • monitoring of PW discharge volume	**PS 6.3** No potential to impact ecosystem integrity from PW outside of acceptable limits of change. The acceptable limit of change is no impacts from PW beyond the approved mixing zone.	**MC 6.3.1** Records show routine monitoring has been conducted as per **Table 6-8.** Further investigations have identified no potential to impact ecosystem integrity from PW outside of acceptable limit.

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	• chemical characterisation • WET testing.		
	C 6.4 Online monitoring and/or procedural controls in place to monitor and control PW discharge volume, OIW concentration, and prevent discharge of PW with high OIW concentration through OIW analyser, or off spec/outage procedures. Process performance monitored by OIW concentration analyser or manual sampling, and volume meter(s) available.	**PS 6.4.1** Instrumentation integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) P31 – Environmental Emissions Monitoring and Controls, which: • provides means of detecting environmental releases, emissions and discharges to prevent MEEs from manifesting over time, and/or assure compliance monitoring and reporting equipment as required. • ensures monitoring data is available to control PW discharge volume and OIW concentrations; to prevent discharge of PW with high OIW concentrations.	**MC 2.2.1** Refer to **Section 6.6.2**
		PS 6.4.2 In the event the OIW analyser is offline, manual sampling is undertaken when safe and practicable to do so (subject to MOC if samples are unable to be taken). Six hourly samples are taken in accordance with the NRC's sampling requirements	**MC 6.4.2** Records demonstrate compliance with off spec/ outage procedures.
	C 6.5 The online analyser is calibrated with a manual sample in accordance with Offshore Laboratory Determination of Oil in Water Standard Operating Procedure.	**PS 6.5** Complete calibrations of online analyser and manual OIW sampling equipment in accordance with Offshore Laboratory Determination of Oil in Water Standard Operating Procedure.	**MC 6.4.2** Records demonstrate compliance with off spec/ outage procedures.

6.6.6 Routine and Non-routine Discharges: Utility Systems, Drains and Support Vessels

Context		
Drainage Systems – **Section 3.7.5** Utilities Systems – **Section 3.7.6** Support Vessels – **Section 3.8**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5**	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-economic***	***Decision Type***	***Consequence / Impact***		***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Discharge of sewage, grey water and putrescible waste from the NRC facility and support vessels.			✓				✓	A	F	Cumulative – E	-	-	LCS GP PJ	Broadly acceptable	**EPO 7**
Discharge of deck, bilge and drain water from the NRC facility and support vessels.			✓				✓	A	F		-	-			
Discharge brine and cooling water from support vessels.			✓				✓	A	F		-	-			

Description of Source of Impact

Sewage, Grey Water and Putrescible Waste

Sewage and grey water are treated onboard the NRC facility by maceration and then disposed to ocean via the sewage caisson. Putrescible wastes, such as food scraps, are also discharged via the sewage caisson from the NRC facility after being ground to < 25 mm diameter.

Vessels may also discharge sewage, grey water and putrescible wastes. Sewage onboard vessels is routinely treated (either via a sewage treatment plant (STP) or macerator) prior to discharge.

During routine maintenance or repair operations of treatment systems, short and infrequent direct discharges overboard may take place.

The volume of sewage and grey water generated is estimated to be in the order of 15 m^3 per day (based on an average volume of 75 L/person/day). The actual volume of discharge will vary depending on personnel levels on the NRC facility and support vessels.

Drains

Non-hazardous open drains collect drainage liquids free of hydrocarbons, diesel, lubricating or seal oils. The water collects in the non-hazardous open drain header and discharged directly to sea. The drainage collection from sources potentially containing diesel, lubricating oils are collected via a header system which feeds into the hazardous open drains caisson via a seal pot.

Hazardous open drains, which collect oily water from hazardous areas on the NRC facility, including wash down water and spillage of liquids on decks, equipment drip trays or bunded areas. The hazardous open drains collect tanks for gravity separation. Residual oil is transferred to the ISO waste oil containers. The drains for both NRA and NRB platforms flow to the caisson of each open hazardous drain for gravity separation. Accumulated oil in the caisson is pumped to waste oil tank and then to waste iso-containers.

Outfall from the NRA hazardous open drains caisson is at the bottom of the caisson 23.5 meters below the minimum sea level. Outfall from the NRB hazardous open drains caisson is at the bottom of the caisson 25 meters below the minimum sea level.

The hazardous closed drain system collects liquids from normally pressurised equipment prior to maintenance, and intermittent flow from other process equipment. The drains sump caisson receives liquids from the LP closed drain system, the test separator, the skimmer vessel when in use and the HP flare KO liquids dump. The produced water header discharges to the drains sump caisson at an elevation of 15 meters which is well below the normal operating level of the oil layer (refer to **Section 6.6.5**). The drain sump caisson discharges to sea at an elevation of 40 meters.

Chemicals used onboard the NRC facility may be introduced to the environment via the drains system, including;

- deck washdown, maintenance drainage of treated water systems (e.g. tempered water), and other cleaning/flushing activities.
- mandatory annual testing of the active fire deluge and foam system for safety requirements.
- marine growth treatment of drain caissons.

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

The seawater system is routinely used onboard the NRC facility to process cooling for seawater / tempered water heat exchangers and provide seawater to service water system via service water pumps (**Section 3.7.6**), which is returned to the ocean via two caissons approximately 15 m below the water surface. Seawater used for cooling is dosed with sodium hypochlorite at approximately 2 ppm to inhibit marine growth. Seawater system discharge temperature and volumes are typically 45 °C and 15,200 m^3 per hour respectively.

Brine

The RO plant onboard the NRC facility is used to produce potable water, with the brine from the RO plant discharged to the marine environment from the NRA platform. Brine from the RO plant is generally 55-60 parts per thousand salts, with approximately 9.5 m^3 of brine produced per hour. Small quantities of anti-scaling and cleaning chemicals may also be discharged with the brine.

Impact Assessment

Sewage, Putrescible Waste and Grey Water

The environmental impact associated with ocean disposal of sewage, grey water 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. Other contaminants of concern occurring in these discharges may include ammonia, *E. coli*, faecal coliform, volatile and semi-volatile organic compounds, phenol, hydrogen sulphide, metals, surfactants and phthalates.

No significant impacts from planned (routine and non-routine) discharges to the marine environment are anticipated, given the minor volumes involved, the localised mixing zone (as indicated by dilution modelling at the NRC facility) and high level of dilution into the open water marine environment of the PAA. This is supported by historical water quality and sewage discharge monitoring undertaken by Woodside around the nearby GWA platform. The GWA platform is approximately 18 km west of the Offshore Facility Operational Area and conditions are comparable. Water quality monitoring around the GWA platform (which is a staffed platform) indicates there was no detectable decrease in oxygen saturation, nutrients or increase in oxygen demand at the GWA platform (BMT Oceanica, 2015a). In addition, monitoring of sewage discharges demonstrated that a 10 m^3 sewage discharge reduces to approximately 1% of its original concentration within 50 m of the discharge location (Woodside, 2008).

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). The estimated daily loading from sewage and putrescible waste (up to 0.45 m^3 a person per day) is not significant in comparison to the daily turnover of nutrients in the area. Furthermore, support vessels are typically moving when in the PAA, which facilitates mixing of sewage, putrescible wastes and grey water when discharged.

The impact of nutrients associated with discharge of sewage, grey-water 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

Drain water from the NRC facility and bilge and deck drainage water from support vessels is expected to mix rapidly in the marine environment upon discharge. Deck drainage and treated bilge may contain a range of chemicals, oil, grease and solid material. This particulate matter can cause an increase in the turbidity of the receiving waters close to the point of discharge. The addition of these substances into the marine environment will result in a change ambient water quality and may directly affect marine organisms, with impacts varying depending on volumes and the of contaminants. However, these discharges will disperse and dilute rapidly, with concentrations significantly dropping with distance from the discharge point. The PAA are located more than 12 nm from land exceeding the exclusion zones required by Marine Order 96 (Marine pollution prevention – sewage) 2018 and Marine Order 95 (Marine pollution prevention – garbage) 2013.

Water foaming agents used in aqueous firefighting foam (AFFF), by nature of the surfactant properties by which it effectively extinguishes liquid fires, may be harmful to aquatic organisms within freshwater environments like ponds and streams. This surfactant effect is greatly diminished in the offshore environment (due to wave and wind action) and does not present the same risks to pelagic fish and other marine life. Nevertheless, the planned release of these materials is restricted to testing activities to ensure safe and effective operation of the system in an emergency.

No significant impacts from the planned routine discharges are anticipated, because of the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment of the PAA. Based on the detailed evaluation and low levels of potential contaminants, the magnitude of potential impact of a change in water quality is considered highly localised with no lasting effects.

Cooling Water

The key physicochemical stressors that are associated with reject cooling water discharge from support vessels include salinity, pH, temperature and chemical toxicity.

Cooling water from the NRC facility may contain small quantities of residual chlorine. Cooling water modelling was undertaken to assess potential temperature changes at typical discharge rates (15,180 m^3/hr) and at the maximum discharge rates (16,900 m^3/hr) with discharge temperatures varying from 34°C to 50°C (SKM,2008). During summer and winter, the thermal plume typically cooled to within 3°C of ambient temperature within 200 m. In transition season under certain conditions low flushing and water pooling around the discharge are observed. Under worst case conditions this can result in temperatures greater than 3°C above ambient temperature at 200 m for short periods. Results indicate temperatures cool to within 3°C of ambient temperature within 200 m of the caissons 97% of the time.

Woodside also undertook modelling of continuous wastewater discharges (including cooling water) for its Torosa South-1 drilling program in the Scott Reef complex (Woodside, 2014). This study predicted that discharge water temperature decreases quickly as it mixes with the receiving waters, with the discharge water temperature being <1°C above ambient within 100 m (horizontally) of the discharge point, and 10 m vertically (Woodside, 2014). As such, any potential impacts to water quality are expected to occur within approximately 100 m of the source of the discharge, where concentrations are highest.

Electrochlorination is used to generate sodium hypochlorite in the cooling system. Sodium hypochlorite functions as a biocide in the cooling water system and is expected to readily dissociate and break down once discharged. A dosage rate of chlorine equivalent will be 2 ppm leads to a discharge concentration of Total Residual Chlorine (TRC) in the cooling water of about 1ppm. Modelling of the total residual chlorine was undertaken for the NRC facility (SKM) at TRC concentration of 1 ppm. In all scenarios, the modelled concentrations were below the PNECs for acute and chronic effects at 200 m distance from the discharge.

Based on the detailed risk evaluation, the magnitude of the potential impact of a change in water quality from routine and non-routine cooling water discharges is assessed as having no lasting effect on the receiving 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 can move away from the brine plume; hence impacts are restricted to planktonic and sessile organisms. Reject brine will sink through the water column, owing to the 20% to 50% increase in salinity (Frick *et al*., 2001), where it will be rapidly mixed with receiving waters and dispersed by ocean currents, decreasing in salinity rapidly as distance from source increases.

The scale inhibitors used in the prevention of fouling within cooling systems are typically low in molecular weight and phosphorous compounds that are water-soluble, and only have acute toxicity to marine organisms approximately two orders of magnitude higher than typically used in the water phase (Black *et al*., 1994). The biocides typically used in the industry are highly reactive and degrade rapidly (Black *et al*., 1994).

Monitoring of water in the mixing zone around the nearby GWA platform confirmed salinity within the mixing zone was consistent with the surrounding environment (BMT Oceanica 2015); these results provide evidence that the RO brine plume is mixed rapidly. Impacts from RO brine discharge will have no lasting effects on the environment and are highly localised to the discharge location.

Based on the detailed risk evaluation, the magnitude of the potential impact of a change in water quality from routine and non-routine brine and cooling water discharges is assessed as having no lasting effect on the receiving environment.

Cumulative Impacts

Given the activities that may be conducted during the Petroleum Activities Program, there is the potential for cumulative impacts from routine discharges of sewage, putrescible waste, grey water, bilge water or drain water and other marine discharges including PW, due to:

- periodic, repeated discharges at the same location (from the NRC facility) over the course of the Petroleum Activities Program; and
- cumulative discharges from differing point sources (NRC and support vessels).

Given the nature of these routine discharges, the localised spatial extent of impacts and the well mixed receiving environment, the cumulative impacts from these discharges are expected to be localised, and not considered to result in impacts greater than slight and short-term in duration. Additionally, the highly localised nature of the impacts of routine discharges, no cumulative impacts from similar discharges from other production facilities or support vessels (e.g. GWA) are expected. Cumulative discharges from utility discharges and PW are anticipated to have a slight and short-term cumulative environmental effect, with no measurable impact on fish populations. All discharges are managed through the controls outlined and to acceptable levels.

Given the minor quantities involved, the expected localised mixing zone, the rapid dilution in the open water environment and the distance to other facilities, the potential for cumulative impacts to water quality would be restricted to within approximately 100 m of the discharge location. Hence, cumulative impacts are expected to be slight and short term (i.e., Environment Impact – E). No cumulative impacts from similar discharges from support vessels and other production facilities in the vicinity (e.g., GWA) are expected given the distance from the Offshore Facility Operational Area.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[40]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Contract vessels complying with Marine Orders for safe vessel operations: • Marine Order 91 (Oil) • Marine Order 95 (Pollution prevention – garbage) • Marine Order 96 (Pollution prevention – sewage). • Marine Orders 91, 95 and 96 (pollution prevention) reduce the potential impact of marine wastewater discharges on water quality.	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.	Controls based on legislative requirements – must be adopted.	Yes **C 7.1**
Good Practice				
Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required.	F: Yes. Woodside routinely implements a chemical selection process based on the OCNS at the facility. CS: Minimal. The OCNS is widely	Selection and assessment of chemicals in accordance with the Woodside process reduces environmental impacts associated	Woodside's chemical selection process is used to ensure chemicals are selected with the lowest practicable	Yes **C 5.1**

[40] Qualitative measure

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[40]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• If chemicals with a different OCNS rating, sub warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the guideline prior to use.	used throughout the industry, and chemical suppliers are aware of the requirements of the scheme.	with planned chemical discharge.	environmental risks while still providing the required technical capability.	
Facility sewage system macerator maintained.	F: Yes. CS: Minimal cost. Standard practice.	Treating and macerating sewage is standard industry practice, ensuring the substance disperses in the receiving environment with minimal effects to water quality.	Benefits outweigh cost/sacrifice.	Yes **C 7.2**
Putrescible waste from the NRC facility will be macerated prior to overboard discharge to increase dispersion thus reducing impact of discharge on water quality.	F: Yes CS: Minimal cost. Standard practice.	Treating and macerating putrescible waste is standard industry practice, ensuring the substance disperses in the receiving environment with minimal effects to water quality.	Benefits outweigh cost sacrifice	Yes **C 7.3**
Sewage from the NRC facility will be macerated prior to overboard discharge to increase dispersion thus reducing impact of discharge on water quality.	F: Yes CS: Minimal cost. Standard practice.	Treating and macerating sewage is standard industry practice, ensuring the substance disperses in the receiving environment with minimal effects to water quality.	Benefits outweigh cost sacrifice	Yes **C 7.4**
Professional Judgement – Eliminate				
Capturing and treating all drainage.	F: No. Discharge from deck drainage is produced from rainfall events and is unavoidable. Collecting drainage during unstaffed operations is not possible as there is a risk of the collection tank overfilling, resulting in potential spillage of hydrocarbons.	Not considered – control not feasible.	Not considered – control not feasible.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[40]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	CS: Eliminating the discharge by collecting all contaminated run-off and storing it is not practicable due to the size/weight and the unstaffed philosophy.			
Storing, transporting and treating/disposing onshore of sewage, greywater, putrescible and bilge wastes.	F: No. Would present additional safety and hygiene hazards resulting from the storage, loading and transport of the waste material. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Substitute				
Long term transport of potable water from shore for NRC and vessels	F: Yes. Potable water can be sources form onshore water supplies. CS: Significant. The long-term costs and operational complexity associated with potable water bunkering outweigh cost and negligible environmental footprint associated with 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				
Facility open hazardous drain system integrity maintained as far as practicable.	F: Yes. CS: Minimal cost. Standard practice.	The open hazardous drain system is maintained to support appropriate disposal of environmentally hazardous liquids.	Benefits outweigh cost/sacrifice.	Yes **C 7.5**
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 adopted controls appropriate to manage the impacts of discharge of sewage, putrescible waste, grey water, bilge water, drain water, cooling water and brine from the NRC facility and support				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[40]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
vessels. 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:

The impact assessment has determined that, given the adopted controls, routine and non-routine discharges of sewage, putrescible waste, grey water, bilge water, drain water, cooling water and brine from the NRC facility and support vessels are not expected to result in potential impacts greater than localised contamination not significantly above background levels outside a localised mixing zone. At the platform, these discharges would mix with PW discharges (described in Section 6.6.5), but would dilute well within the established 300 m mixing zone and cumulative impacts beyond this area are not anticipated. Further opportunities to reduce the impacts have been investigated above. The adopted controls are considered good oil-field practice/industry best practice, meet legislative requirements under Marine Orders 91, 95 and 96 and consider matters raised through consultation.

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 MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 7 Limit adverse water quality impacts to 'Slight, short-term'[41] from routine and non-routine wastewater discharges during the Petroleum Activities Program.	**C 7.1** Contract vessels complying with Marine Orders for safe vessel operations: • Marine Order 91 (Oil) • Marine Order 95 (Pollution prevention – garbage) • Marine Order 96 (Pollution prevention – sewage).	**PS 7.1** Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class (Marine Orders 91, 95 and 96).	**MC 7.1.1** Records demonstrate vessels are compliant with standard maritime safety procedures (Marine Orders 91, 95 and 96).
	C 5.1 Refer to **Section 6.6.4**	**PS 5.1** Refer to **Section 6.6.4**	**MC 5.1.1** Refer to **Section 6.6.4**
	C 7.3 Putrescible waste from the NRC facility macerated prior to overboard discharge.	**PS 7.3** Putrescible wastes macerated (specified to <25mm size) when discharged to sea	**MC 7.3.1** Putrescible and sewage system maintenance records.
	C 7.4 Sewage system macerator maintained.	**PS 7.4** Sewage system macerator maintained as far as practicable.	

[41] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
	C 7.5 Facility open hazardous drain system integrity maintained as far as practicable.	**PS 7.5** Integrity will be managed in accordance with SCE Management Procedure (S**ection 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: F22 – Open Hazardous Drains, to: • prevent escalation of an incident following loss of containment, fire and/or explosion by removing or containing flammable liquid from hazardous areas • support appropriate containment and disposal of environmentally hazardous liquids to avoid damage to the environment.	**MC 2.6.1** Refer to **Section 6.6.2**

6.6.7 Routine and Non-routine Atmospheric and Greenhouse Gas Emissions: Fuel Combustion, Flaring and Fugitives

Context		
Operational Flaring – **Section 3.7.7** Utility Systems – **Section 3.7.6** Support Vessels – **Section 3.8**	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-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
NRC facility internal combustion engines, operational flaring and fugitive emissions, and vessel emissions (including incinerators).				✓				A	F	-	-	LCS GP PJ	Broadly Acceptable	**EPO 8** **EPO 9**
Contingent flaring during well unloading for pressure test and clean up.				✓										
Temporary emissions from diesel engines.				✓										
GHG emissions associated with onshore processing of gas, third party transportation, regassification and combustion by end users.				✓				B						

Description of Source of Impact

Atmospheric emissions associated with the Petroleum Activities Program can be classified into two categories:

- Atmospheric emissions (non-greenhouse gas emissions) are gases and particulates from an activity, or piece of machinery, which have a recognised adverse effect on human health and/or flora and fauna. The main emissions responsible for these effects include carbon monoxide (CO), oxides of nitrogen (NOx), sulphur dioxide (SO_2), particulate matter less than 10 microns (PM10), non-methane volatile organic compounds (VOCs), BTEX (benzene, toluene, ethylbenzene and xylenes), which are specific VOCs of interest.
- Greenhouse gas (GHG) emissions refer to gases that trap heat within the atmosphere through the absorption of longwave radiation reflected from the earth's surface. The main gases associated with this effect include carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Other greenhouse gases include perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF6). There are considered to be both direct and indirect GHG emissions.

In this section, atmospheric emissions estimates are developed in line with the National Pollutant Inventory (NPI) Emission Estimation Techniques (EET). GHG emissions are estimated using the *National Greenhouse and Energy*

Reporting (NGER) Measurement Determination 2008 (Cth). The following section has been separated into Direct Emissions (Scope 1 & 2) and Indirect Emissions (Scope 3), aligned with the definitions of the GHG Protocol Corporate Standard (GHG Protocol 2015) and NGER. As NRC generates its own power, there are no Scope 2 emissions associated with the activity.

The main sources of GHG emissions associated with the Petroleum Activities Program are shown in **Table 3-4**. GHG emissions sources that are not part of the Petroleum Activities Program (e.g. GHG emissions from the onshore processing of NRC gas) are included for consideration as indirect emissions. In the context of this EP, GHG emissions are classified as Direct and Indirect Emissions, as shown in **Table 3-4**.

The GHG Protocol 2015 defines indirect GHG emissions as *emissions that are a consequence of the activities of the reporting entity but occur at sources owned or controlled by another entity*. For the purposes of this EP the "reporting entity" is the NRC offshore facility and therefore, onshore processing and support vessel/helicopter operations are considered indirect emissions sources.

Direct Atmospheric and Greenhouse Gas Emissions

Direct atmospheric emissions from the NRC facility during the Petroleum Activities Program include emissions from equipment and generators, flares, fugitives and process vents. Direct emissions and combustion products typically include CO_2, water vapour, NOx, SO_2, methane, refrigerant gases, particulates and VOCs.

The emissions estimates presented in **Table 6-10**, **Table 6-11** and **Table 6-12** are derived from data collected during 2022/2023 and adjusted for the next 5-year Period. They are considered representative of the next 5-year period of the NRC EP, approximately 2024 up to 2029[42].

Variance within the period may occur, due to a number of factors such as reservoir and production system performance outcomes, planned activities including shutdowns and maintenance activities and unplanned reliability events. Emissions estimates below are provided as a reasonable estimate to inform an impact and risk assessment associated with activities requiring emissions to air.

Fuel Emissions

Fuel gas consumption for compression and power generation is the largest source of combustion emissions from the NRC. The largest users are the gas export compressors for each train and the four gas turbine generators that supply power to the facility.

In 2022/2023, up to 191,439 t of fuel gas was used on the NRC, the combustion of which equated to the emission of 464,298 t of CO_2 equivalent. Diesel is used for firewater pumps, emergency generators, cranes and back-up fuel for the turbine generators. Diesel usage on the facility (excluding support vessels) in 2022/2023 was up to 2,200m^3, the combustion of which equated to the emission of 5,961 t of CO_2 equivalent. Annual fuel gas and diesel usage is not expected to significantly change over the period in which this EP is in force.

The forecast annual emissions from fuel combustion on the NRC facility has been estimated using emissions factors (as per National Pollutant Inventory (NPI) Emission Estimation Techniques (EET)).

Incinerators may be used onboard vessels to dispose of flammable domestic wastes such as cardboard. Incinerators are typically used infrequently, with wastes generally segregated and transported to shore for disposal.

Table 6-10: Estimated annual emissions from fuel combustion at the facility under steady state operations (excluding support vessels)

Emission type	Metric	Estimated annual emissions from fuel gas combustion	Estimated annual emissions from diesel combustion	Estimated total annual emissions from fuel combustion
CO_2	Tonnes CO_2-e	463,127	5,936	469,062
CH_4	Tonnes CH_4-e	901	8	910
N_2O	Tonnes CO_2-e	270	17	287
Total CO_2 eq	CO_2 eq Tonnes	464,298	5,961	470,259
NOx	Tonnes	1,855	117	1,971
SOx	Tonnes	3	0.0	3
CO	Tonnes	475	31	505

[42] *End of field life is estimated to be 2031, however is dependent on reservoir performance, therefore up to five years of operations is included.*

[1] Based on combustion of 191,439 tonnes of fuel gas during 2022/2023

[2] Based on combustion of 2200 m3 of diesel during 2022/2023

Flaring

During normal operations, hydrocarbon gas is flared from the NRC facility via the HP and LP flare systems. Gas flaring emits gases to the atmosphere and consumes natural gas, a non-renewable resource. Emissions and combustion products include CO_2, NO_x, SO_2, methane, particulates, and VOCs. Incomplete combustion under certain scenarios may also generate dark smoke.

The release of hydrocarbon gas to atmosphere by flaring is an essential practice, primarily for safety requirements. Operational flaring is comprised of two elements, being:

- normal operational flaring associated with flare system purge and pilot, process flows and glycol regeneration
- non-routine flaring that may result from activities such as planned shutdowns and emergency shutdown testing, and unplanned shutdowns and emergency shutdowns, production restarts, equipment outage/failures, subsea flowline depressurisation, and well remediation activities

During flaring, the burnt gas generates mainly water vapour and CO_2. Based on 2022/2023 flaring from the NRC facility, it is estimated that up to 30,570 t of gas is flared per year including water vapour, inert gas and hydrocarbon gas in routine and non-routine activities, such as planned shutdowns or production trips could be flared from NRC Facility. Flaring volumes vary as a result of production rates and non-routine activities. HP flaring may occur periodically during suspension, with reduced LP flaring. The forecast annual atmospheric emissions from flaring were estimated using the NPI EET.

Table 6-11: Estimated annual emissions from flaring at the facility

Component	Metric	Estimated upper flaring emissions (tonnes)[2]
CO_2	Tonnes CO_2-e	82,539
CH4	Tonnes CH_4-e	4,066
N2O	Tonnes CO_2-e	795
Total CO2eq	CO_2 eq (total)	87,400
NOx	Tonnes	46
SOx	Tonnes	0
CO	Tonnes	26

Reference: NGER Measurement Determination 2008 and NPI EET Manual for Oil and Gas v2.0 2013, Table 8.

[2]Based on flare estimate of 30,570 tonnes

Non-routine Venting of Process Hydrocarbons via Flare System

During normal operations, hydrocarbon gas is flared via the HP and LP flare systems for both NRA and NRB. These systems are maintained to effectively combust hydrocarbons as a critical component for the safe operation of the NRC. In the unlikely event the flares are extinguished (for example during a cyclone) or unavailable (such as after a major shutdown prior to system ramp-up), the hydrocarbon gas discharged via the flare system may initially not be combusted during the period required to purge the flare and re-establish flare ignition. This may result in the short-term (days), low-rate release of methane to the atmosphere. Intermittent venting from the facility represents a minor source of atmospheric emissions and is not considered to pose a risk beyond the routine air emissions described in this section.

Fugitive Emissions

Fugitive emissions can occur from pressurised equipment and are inherent in design. Fugitive emissions may occur due to infrequent operational activities, or unintentional equipment leaks. Sources can include valves, flanges, pump seals, compressor seals, relief valves, vents, sampling connections, process drains, open-ended lines, casing, tanks and other potential leakage sources from pressurised equipment. Fugitive emissions are quantified and reported as requirements set under the National Greenhouse and Energy Reporting Scheme (NGERS).

As much of the safe operation of the NRC relies on the effective containment of hydrocarbons, the volumes of routine and non-routine fugitive emissions are considered to be small (**Section 6.7**) for potential unplanned atmospheric hydrocarbon releases associated with accidents, incidents and emergency situations). The National Greenhouse and

Energy Reporting (Measurement) Determination 2008 estimates fugitive emissions from shallow water offshore platforms (e.g. NRC platform) to be 1,747.1 t CO_2-e p.a. of methane and 7.1 t CO_2e p.a. of carbon dioxide.

The National Greenhouse and Energy Reporting (Measurement) Determination 2008 is applied for the estimation of greenhouse gas emissions by facilities in Australia, including from fugitive emissions. Using these estimation techniques, NRC reported up to 2,200 t CO_2-e 2022/2023.

Discrete relatively small volumes of packed gases and charged systems including non-ozone depleting refrigerant gases are used across the NRC and vessels which have potential for small volume leaks (typically less than 100 kg per isolatable inventory). The NRC is fitted with a gaseous fire extinguishing system utilising CO_2 and Inergen, which has zero ozone depleting potential and a low global warming potential. The gaseous fire extinguishing agents are only released as demanded by the applicable safety system or as per certification testing requirements.

Indirect Emissions

Greenhouse Gas and Atmospheric Emissions associated with Support Vessels and Helicopters

GHG and atmospheric emissions are generated by vessels and helicopters supporting NRC. Vessel emissions include those from internal combustion engines and fugitives. Atmospheric and GHG emissions associated with support vessels vary depending on the nature of activities being undertaken; for example, travelling or “steaming” to a destination at low speed uses less fuel and generates lower atmospheric and GHG emissions than high speed steaming. Emissions generated during safety related vessel standby activities, holding station using DP during loading and unloading of materials to the facility or undertaking subsea IMMR work also vary. Vessel Masters control day to day operations that determine support vessel emissions. Woodside has the potential to influence fleet level approach to support vessel emissions through contracting activities. Refrigerant gases are used onboard supply vessels in small quantities.

Expected annual GHG emissions for vessel and helicopter activities have been estimated to be:

- 3,672 tCO_2-e for support vessels, based on diesel consumption in 2023 (some vessels are dual-fuel and can use LNG, if using LNG as fuel, combustion emissions are expected to be lower)
- 1,355 tCO_2-e for IMMR vessels, based on diesel consumption.
- 413 tCO_2-e for helicopters, based on Jet A1 fuel consumption in 2022/23

Indirect emissions relating to these sources are expected to be relatively constant throughout the EP period and until EOFL.

GHG Emissions associated with Processing and Product End-use associated with NRC

Indirect emissions associated with NRC result from hydrocarbon processing (onshore), third party transport of products, regassification, distribution and combustion by end users. Indirect GHG emissions associated with NRC operations were estimated using historical emissions intensity methods. Key influences impacting indirect GHG associated with NRC include:

- Total production – indirect emissions are proportional to total production, which varies with shutdown activity, or gradual reservoir decline.
- Composition of produced gas – onshore emissions are proportional to reservoir CO_2.
- Split of saleable products from KGP – the proportion of hydrocarbons from NRC sold as LNG, condensate, domestic gas and LPG varies. Each product requires differing amounts of energy to process to the point of sale and varies based on reservoir composition, field contribution and commercial reasons.

Indirect emissions associated with annual production at NRC, including those apportioned at KGP, and from transport and customer combustion, are estimated to be approximately 22.12 MtCO_2-e per annum, totalling up to 110.60 MtCO_2e at expected EOFL. This is based on operational data for production from NRC.

Woodside’s current forecast is that the reservoir produced via NRC will decline toward EOFL. Overall, the trend of hydrocarbon production and indirect emissions from onshore processing and third-party transport, regasification, distribution, and end use are expected to also decline.

Table 6-12: Indirect and direct GHG emissions associated with NRC offshore production

Source of Impact	Annual estimated emissions (MtCO_2-e)	Total possible emissions for EP period (MtCO_2-e)
Direct Emissions		
Fuel, flaring and fugitives	0.560	2.80
Indirect Emissions		
Onshore hydrocarbon processing	2.200	11.000

Vessels and helicopters	0.004	0.022
Third party transport of products, regassification, distribution and end use	19.920	99.580

1 Based on 2022/2023 maximum monthly production and KGP emissions intensity apportionment calculation.

2 Source: EcoInvent 3.5 database and National Greenhouse and Energy Reporting (Measurement) Determination 2008. EcoInvent v3.5 represents a large collection of inventory data. It has been recognised as emission factor source for the European Union Renewable Energy Direction greenhouse gas methodology and is aligned to the principles of the NGERs methodology.

The annual estimated emissions presented in Table 6-12 represent the year with highest GHG emissions in the duration of the 5 year prior to acceptance of this EP. All estimates are sensitive to production rate, which is subject to uncertainty associated with reservoir and process performance and will change over the life of the facility. Relatively high initial "plateau" production rates are expected to extend beyond the duration of this EP. This is anticipated to eventually decrease as reservoir/s are depleted, and emissions associated with onshore processing and third party consumption, which are highly sensitive to produced volumes, are expected to decline accordingly over field life.

The precise shape and pace of the energy transition is uncertain. It is expected to vary across countries because they have different starting points, development requirements, resources and capabilities. However, the scale of the transition is clearer, as it will take many trillions of dollars, invested over decades. Today, Woodside has a portfolio of oil and gas assets. We are also diversifying our portfolio by investing in new energy products and lower carbon services that can avoid or reduce customer emissions. We see an ongoing role for gas from the NRC facility to support our customers' plans to secure their energy needs during the transition.

Impact Assessment

Air Quality

Facility and vessel routine and non-routine emissions, predominantly routine flaring, have the potential to result in localised, temporary reduction in air quality, generation of dark smoke and contribution to greenhouse gas emissions. Potential impacts of emissions depend on the nature of the emissions, as well as the location and nature of the receiving environment.

Facility design (including the rapidly dispersive characteristics of the gas turbine exhausts, flare and other emissions), the estimated level of pollutants in the emissions, and the absence of elevated background ambient levels have been considered in estimating the potential for interaction with human and environmental sensitivities. The Offshore Facility 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 foraging BIA for the wedge-tailed shearwater overlapping the Offshore Facility Operational Area; as such, wedge-tailed shearwaters may occur near to the facility airshed. The nearest potential seabird roosting habitat, the Montebello Islands, are over 115 km south of the Offshore Facility Operational Area. Given the highly dispersed nature of facility air emissions, no adverse impacts to birds are anticipated due to air emissions.

Breeding BIAs for the wedge-tailed shearwater, roseate tern, and Australian fairy tern overlap the Export Trunkline Operational Area, however atmospheric emissions from vessels are highly localised and quickly dispersed, therefore no impacts are expected to the wedge-tailed shearwater, roseate tern and Australian fairy tern.

Potential impacts are expected to be localised air quality changes, limited to the airshed local to the NRC with no lasting effect. Air emission impacts are not expected to have direct or cumulative impacts on sensitive environmental receptors, or above National Environmental Protection (Ambient Air Quality) Measures. Additionally, air quality around the NRC is maintained to provide a safe working environment for operational staff.

The offshore location means the flare and potential black smoke resulting from emissions are not directly visible from the nearest landfall (Montebello Islands, 98 km south-west of the Offshore Facility Operational Area at the closest point). Hence, no impacts to visual amenity for residential communities are expected. Visual amenity impairment to tourism activities is not expected.

Potential impacts are expected to be temporary, localised air quality changes, limited to the airshed local to the riser platform. 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 and are expected to disperse well before the nearest populated area (Dampier).

The flare and potential black smoke resulting from emissions may impact visual amenity. The offshore location of the Petroleum Activities Program is not directly visible from the nearest landfall (Dampier Archipelago, 110 km south of the Offshore Facility Operational Area at the closest point). Hence, no impacts to visual amenity for residential communities are expected. Visual amenity impairment to tourism activities is not expected.

Indirect Onshore Atmospheric Emissions

Noting the relatively small contribution of indirect atmospheric emissions associated with the processing of NRC gas to the Murujuga airshed, outcomes of regulatory assessments of downstream facilities (ie. the Karratha Gas Plant) and the inconclusive evidence for a causal link between industrial air emissions and anthropogenic change to rock art on Murujuga, the risk of processing NRC gas at onshore facilities adversely impacting rock art on Murujuga is assessed as low and not discussed further in this section. The regulatory context as well as consideration of Cultural Features and Heritage Values (Murujuga rock art and indirect atmospheric emissions generated from onshore processing) is discussed further in Section 6.10.

No human health effects related to indirect atmospheric emissions from third-party onshore processing facilities are anticipated associated with NRC Offshore Operations. Pilbara cumulative air quality over the last decade (which included NRC Offshore Operations activities) consistently experienced levels well below key air health criteria. Cumulative airshed human health is governed by other regulatory bodies (including monitoring and modelling assessment conducted by these), and onshore facilities are subject to applicable regulatory assessment (such as WA State EP Act, Ministerial Statement, Licences and Air Quality Management Plans assessed and approved by applicable regulators). Publicly available information for third-party facility assessments are available on the DWER website: (https://www.epa.wa.gov.au/about-environmental-impact-assessment) and proponent websites which include publicly available management plans and performance and compliance reporting. Key emissions applicable to onshore third-party gas processing are assessed as low risk consistent with regulator assessment and approved air quality management plans and are therefore not discussed further in this EP.

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 attributed to any one activity or one project, including the NRC facility, 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. There is no direct link between greenhouse gas emissions from the NRC facility, NRC project and climate change impacts.

Climate change impacts upon Australian receptors cannot be linked to the NRC facility but are instead the result of the accumulation of net greenhouse gas emissions in the atmosphere. The accumulation of net greenhouse gas emissions in the atmosphere is, in turn, influenced by global energy demand and the composition of the global energy mix. Although the NRC facility cannot be linked to climate change impacts; the following contextual evaluation is provided.

GHG Emissions – Global and Australian Context

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 (Woodside, 2023a).

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 2000 quantitative emissions pathways were submitted to the IPCC, of which 1202 scenarios included sufficient information for assessing the associated warming. The report found that there are many pathways in the literature that likely limit global warming to 2°C with no overshoot, or to 1.5°C with limited overshoot. These variations occur because, while climate science is able to calculate a 'carbon budget' of net emissions before any particular temperature outcome is reached, the allocation of

this budget between different human activities requires additional judgements about for example technology, economics, consumer preferences and policy choices.

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

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

- further climate change is inevitable, with the rate and magnitude largely dependent on the emission pathway (very high confidence)[43];
- 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); and
- increased heavy rainfall intensity is projected, with fewer tropical cyclones and a greater proportion of severe cyclones (medium confidence) (Lawrence *et al*., 2022).

The AR6-WGII also contains information about projected impacts to health and well-being for the Australasian region including, amongst others:

  - detrimental effects on human health due to heat stress, changing rainfall patterns including floods and drought climate-sensitive air pollution (including that caused by wildfires) (high confidence) and vector-borne diseases (medium confidence)
  - vulnerability to detrimental effects of climate change will vary with socioeconomic conditions (high confidence) (Lawrence *et al*. 2022).

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

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

- loss and degradation of coral reefs and associated biodiversity and ecosystem service values in Australia due to ocean warming and marine heatwaves (*very high confidence*);
- 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*); and
- inability of institutions and governance systems to manage climate risks (*high confidence*) (Lawrence *et al*., 2022).

An earlier report by Australia's Biodiversity and Climate Change Advisory Group summarised the potential impacts of climate change to marine and terrestrial species, habitats and ecosystems across Australia (Steffen *et al*., 2009). The

[43] 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).

2009 report identified examples of observed changes in Australia's biota that were considered consistent with the emerging climate change 'signal', as genetic constitution, geographic ranges, lifecycles, populations, ecotonal boundaries, ecosystems, and disturbance regimes (Steffen *et al*., 2009). The report also stated:

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

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

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

Impacts of climate change such as altering temperature, rainfall patterns and fire regimes, are likely to lead to changes in vegetation structure across all terrestrial ecosystems within Australia (M. Dunlop *et al*., 2012; Steffen *et al*., 2009). Increases in fire regimes will impact Australian ecosystems altering composition structure, habitat heterogeneity and ecosystem processes. Changes in climate variability, as well as averages, could also be important drivers of altered species interactions, both endemic and invasive species (M. Dunlop *et al*., 2012). Climate change could result in significant ecosystem shifts, as well as alterations to species ranges and abundances within those ecosystems (Hoegh-Guldberg *et al*., 2018).

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

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

Climate variability and change 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 Recovery Plan for the Southern Right Whale (DCCEEW, 2024b) states that 'modelling the links between krill and whale population dynamics with climate change, including changes in ocean temperature, primary productivity, and sea ice, suggests future ocean conditions are likely to have a negative impact on krill populations and in association the baleen whale species that feed on them.'
- The 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.

Emissions associated with NRC are not predicted to contribute materially or substantially to Australia's total GHG emissions, and there is no link between indirect greenhouse gas emissions associated with the NRC facility and climate change impacts upon Australian receptors.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[44]***	***Benefit in Impact Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Vessel operations comply with Marine Order 97 (Marine Pollution Prevention – Air Pollution).	F: Yes. CS: Minimal cost. Standard practice.	Marine Order 97 is required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class. Marine Order 97 reduces air pollution from vessels.	Control based on legislative requirements – must be adopted.	Yes **C 8.1**
National Greenhouse and Energy Reporting Scheme (NGERS) and National Pollutant Inventory (NPI) reporting – estimation of GHG, 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 • act as the single framework to inform policy, meet reporting requirements, avoid	Control based on legislative requirements – must be adopted.	Yes **C 8.2**

[44] Qualitative measure

		duplication, and to ensure that facility net greenhouse gas emissions are managed within applicable baselines.		
Apply for and manage net direct and indirect GHG emissions to within the relevant baseline under the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*	F: Yes CS: Minimal Cost. Standard Practice.	Control based on legislative requirement utilising the national reporting framework for the reporting of information related to GHG emissions. The Safeguard Mechanism requires Operators to offset carbon emissions in excess of the relevant baseline using appropriate credit units.	Control based on legislative requirements – must be adopted.	Yes **C 8.3**
Good Practice				
Forecast, measure, monitor and/or estimate facility GHG emissions (in accordance with NGERS/NPI) to inform optimisation management practices and minimise environmental impact of direct and indirect NRC and KGP emissions.	F: Yes. CS: Minimal cost. Standard practice.	Minimises environmental impact of emissions through planning, ongoing review, governance and optimisation. It combines with good operating practice to maximise production and reduce flaring emissions and fuel emissions at NRC and KGP to manage cost, which improves energy intensity (e.g., cleaner production), optimising emissions from the NWS. Fuel and flared gas are potential product streams, as such, Woodside applies routine short and long term optimisation and investment management framework to identify and prioritise enhancement opportunities. On NRC to date this has been limited to reduced flaring (e.g., flare purge rates); however, NRC opportunities are also considered in this process. Annual flare target setting and monthly review of performance is completed for Angel. NRC and KGP also apply fuel and flare target setting and tracking for indirect emissions management. Daily production meetings allow for optimisation of NWS as an integrated production system, considering impacts of variables such as	Control is WMS requirement – must be adopted.	Yes **8.4**

		maintenance activities and temperature influence on production rates.		
Implement relevant methane management at NRC	F: Yes. CS: Some cost associated with implementation of external commitments. Can be managed by proving technology application and process at onshore facilities and applying learnings, where appropriate, to NRC.	These management measures of NRC, align with Woodside's corporate approach to methane emissions management as appropriate including current OGMP and Near-Zero requirements to deliver appropriate and proportional identification and reduction effort of methane for a platform of this nature and scale. NRC methane management practices include: • Closed Circuit Television (CCTV) monitoring of the flare ignition from the CCR to reduce incomplete combustion in flaring. • Initiate a routine annual methane survey at NRC to identify, quantify and track methane emissions from fugitive sources in accordance with Woodside's Production Optimisation and Opportunity Management Procedure (POOMP) and current OGMP framework. Evaluate fugitive emissions identified and put in place actions to remediate sources where practicable. This framework requires reduction priority according to the materiality of the emissions across Woodside's portfolio of methane emissions. First routine survey undertaken in 2025 to align with the development of the asset inventory. • Safety-driven LDAR - start-up leak checks reduce methane emissions. • Operational gas detection fixed and mobile, to identify	Control is committed – will be adopted.	Yes **C 8.5**

		hydrocarbon leak sources, predominantly methane. • Fugitive emissions ground-up baseline survey		
Maintaining CCTV and Flame Front Generator (FFG) systems to detect and respond to unplanned venting.	F: Yes. CS: Standard practice.	Minimises environmental impact through the reduction of unplanned venting. Monitoring of the flare is conducted via CCTV from the CCR. In the event the flare is extinguished the flare can be manually reignited via the FFG panel.	Benefits potentially outweigh cost/ sacrifice.	Yes **C 8.5**
Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon/alternate fuels.	F: Yes. CS: Fuel cost over the five year contract is considered in the evaluation of responses, allowing for competitive consideration of low carbon alternatives.	Minimises costs 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 8.6**
Woodside supporting customers and suppliers to reduce their GHG emissions by: Promoting global measurement and reporting by participating in industry collaboration initiatives to mature, harmonise and advocate for transparent measurement and reporting Advocacy for policy frameworks that enable a stable approach to carbon emissions management. Working with the natural gas value chain to reduce methane emissions in third party systems (e.g. regasification and	F: Yes. CS: Moderate cost. Standard practice.	Woodside to support customers and suppliers to reduce their GHG emissions.	Potential benefits outweigh cost/sacrifice.	Yes **C 9.1**

distribution), such as through the adoption of the Methane Guiding Principles. Promoting the role of LNG in displacing higher carbon intensity fuels. Supporting the development of new technologies to reduce higher carbon intensive energy sources. Monitoring the global energy outlook including the demand for lower carbon intensive energy such as LNG and displacing higher carbon intensive fuels.				
Professional Judgement – Elimination				
Eliminate flaring by venting un-combusted hydrocarbons.	F: No. Routine hydrocarbon venting is not considered good industry practice, as unburnt methane poses potential for greater environment impact compared to combustion emissions. The ability to flare hydrocarbons is a key safety feature on the facility. Removing the ability to flare hydrocarbons may result in unacceptable safety risks on the facility. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Eliminate flaring by reinjecting un-combusted hydrocarbons.	F: No. Routine hydrocarbon reinjection, as opposed to transport to onshore facilities, would not be consistent with the approved NRC Field Development Plan, which seeks to optimize hydrocarbon recovery while fulfilling NWS gas supply commitments. As such, gas reinjection would not meet concept screening criteria to	Not assessed, control not feasible.	Not assessed, control not feasible	No

	warrant option evaluation. CS: Not assessed, control not feasible.			
Professional Judgement – Substitution				
Fuel for energy generation on the NRC facility is selected for lowest indirect emissions generation practicable: • Fuel gas used in preference to diesel for power generation.	F: Yes. Fuel gas is the primary fuel source on NRC, with diesel as back up fuel used when gas production is shut down. CS: Cost effective.	Gas turbines reduce CO_2 emissions for a given unit of power and reduce spill risk associated with diesel bunkering activities.	Cost effective. Minimises fuel bunkering risks.	Yes. Solution permanently implemented.
Professional Judgement – Engineered Solution				
Maintain flare to maximise efficiency of combustion and minimise venting, incomplete combustion waste products and smoke emissions.	F: Yes. CS: Minimal cost. Standard practice.	Flare tip integrity and ignition system functionality minimises potential for venting, incomplete combustion waste products and smoke emissions.	Fuel.	Yes **C 8.7**
Installation of flare gas recovery systems to reduce emissions entering the atmosphere from flaring	F: Yes CS: Significant additional cost associated with the design and installation of flare gas recovery systems, including significant retrofitting of multiple stages of compression systems, coupled with associated ancillaries, valving and piping, platform modification and weight considerations. The safe addition of required rotating equipment also poses significant production sacrifice and potential domestic gas supply impacts due to the initial design layout, space and safety constraints.	Small to negligible environmental benefit from reducing atmospheric emissions from flaring. The environmental benefit gained from the recovery of flaring emissions would be limited to only a portion of flare system flows due to process safety constraints and flare system operation over a wide design envelope (associated with flow and pressure variations and related flowline integrity management). Furthermore, required retrofitting of multiple stages of compressions (e.g. for LP/HP streams) would offset any environmental benefits through increased power generation emissions. The retrofitting interaction with the safety critical flare system and continued operation of gas compression would also increase platform safety risks.	Given the increased safety risk and the very low, if any, environmental benefit provided when increased power generation emissions are taken into consideration, the installation of flare gas recovery systems is considered grossly disproportionate to the environmental benefit it would provide.	No
Manage vessel speed to reduce fuel combustion.	F: Yes. CS: Standard practice.	Reducing fuel combustion reduces atmospheric emissions.	Benefits outweigh cost/sacrifice.	Yes **C 8.8**

Discussion of ALARP

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 the NRC facility and vessel 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

Risk Based Analysis

Application of Woodside's Risk Management Procedures, implementation of the Emissions and Energy Management Procedure and Production Optimisation and Opportunity Management Procedure reduces GHG emissions risk to ALARP (**Section 7.2**. This includes a system of continual review and improvement of key emissions sources from NWS assets as an integrated system, including NRC, e.g. flaring reduction was implemented, resulting in reduction of flared gas of 140 tpa (395 tCO_2-e). Further opportunities are implemented at KGP to reduce indirect emissions associated with production of NRC and combined emissions from the NWS assets.

Societal Values

Consultation was undertaken for this program to identify the views and concerns of relevant persons, 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.

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e., Decision type A and B for direct and indirect emissions respectively), Woodside considers the adopted controls appropriate to manage GHG emissions from the NRC facility and indirect emissions sources that Woodside can practicably influence, including support vessels, during the five-year term of this EP. The adopted controls meet legislative requirements including:

- Marine Order 97 for support vessels
- NGERS and NPI reporting for direct emissions attributed to NRC and KGP
- National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015.

Indirect GHG emissions from onshore processing at KGP are managed under Ministerial Statement 536. As part of the North West Shelf Project Extension approvals process (currently under assessment) a draft Greenhouse Gas Management Plan has been submitted to the EPA that includes an emissions limit. The KGP is also subject to complying with the Federal Safeguarding Mechanism (SGM) to manage net emissions under the scheme in line with Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050.

The Federal Safeguarding Mechanism (SGM)[45] requires Australia's highest greenhouse gas emitting facilities to reduce or limit their emissions in line with Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050. Direct GHG emissions from the NRC Facility, indirect emissions associated with onshore processing of gas from the NRC as well as indirect emissions associated with the transportation and end-use of gas within Australian safeguard facilities are subject to the SGM, and net emissions from these sources must be kept below a specified limit or baseline.

Safeguard facilities that exceed their baseline must manage their excess emissions so that net emissions are brought in line with the baseline. This may occur by surrendering acceptable quality offsets suitably classified as Australian Carbon Credit Units (ACCUs) or Safeguard Mechanism Credits (SMCs), which are each representative of one tonne of CO2-e per credit. So that sufficient credits are available and that there is a means to comply, safeguard facilities that exceed their baseline are able to buy Government-held ACCUs from the Clean Energy Regulator via the Cost Containment Measure implemented as part of recent reforms.

Safeguard Mechanism (SGM) obligations for the NRC facility as defined under SGM will be met by emissions abatement via operational controls as first preference (described above). Options to manage residual net emissions in excess of baseline include surrendering ACCUs or SMCs, applying to become a trade-exposed baseline-adjusted facility, applying to borrow baseline from the following year or applying for a multi-year monitoring period. Surrendered carbon credits may be generated from Woodside projects, purchased from the market or purchased from the Government through the Cost-Containment Mechanism.

[45] Further information about the SGM and SGM Baselines can be found at the Clean Energy Regulator website: https://cer.gov.au/schemes/safeguard-mechanism and https://cer.gov.au/schemes/safeguard-mechanism/safeguard-baselines

Woodside is implementing programs at a corporate level which relate to indirect emissions associated with customer use of gas from the NRC fields.

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 as the NRC Offshore Facility Operational Area is located in an unpopulated area and located approximately 133 km from the nearest community receptor of Dampier. The adopted controls are considered good oil-field practice/industry best practice and meet requirements of Australia Marine Orders and National Pollutant Inventory reporting.

The predicted GHG emissions associated with NRC are considered de minimis and as such, below acceptable levels and will not materially or substantially contribute to Australia's net GHG emissions or net global emissions levels.

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.

Acceptability Statement: GHG emissions

Principles of Ecologically Sustainable Development

Giving consideration to economic development that safeguards the welfare of future generations, NRC is considered to align with the following core objectives of ESD by:

- Responding to the global energy transition 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.
- Implementing management and mitigation measures for GHG emissions within operational control of the facility, given the uncertainty about future climate change trajectories.
- Implementing mitigation measures for GHG emissions that are controlled or influenced by Operator and associated with the operations of the NRC facility.
- 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
- Woodside Risk Management Policy
- Woodside Climate Policy

For more information, please see Woodside's Climate Transition Action Plan and 2023 Progress Report (Woodside 2023a).

WMS requirements such as the GHG emissions and Energy Management Procedure, Production Optimisation and Opportunity Management Procedure and Woodside's corporate approach to methane emissions management which require continuous improvement and demonstration of ALARP in the context of the asset. This is achieved by implementing tools to identify, evaluate, implement and review emissions reductions projects and develop, govern and report on plans to reduce methane fugitive emissions.

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, and as such Woodside has undertaken an impact assessment of GHG emissions associated with the NRC facility and identified key measures to manage GHG emissions to an acceptable level.

According to Wood Mackenzie Energy Research Consultancy, LNG from Woodside operated facilities is amongst the lowest carbon intensity in the world delivered into North Asia.[46]

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[47]:

> "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.[48] The text further recognised that the transition away from fossil fuels in energy systems is to be done in a just, orderly and equitable manner accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science.[49] It also recognises that transitional fuels can play a role in facilitating the energy transition while ensuring energy security[50].

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% 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). NRC facility (direct GHG) and indirect onshore 3rd party processing facilities are also subject to complying with the Federal Safeguarding Mechanism (SGM) to manage net emissions under the scheme in line with Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050.

Australia's Long-Term Emissions Reduction Plan (DISER, 2021) presents Australia's whole-of-economy plan to achieving net zero emissions by 2050 with priority technologies estimated to achieve 85% reduction and yet-to-be identified emerging technologies abating the remainder. The plan identified LNG as a critical transition fuel and expects growth in the sector with higher use in 2030 than it is today but acknowledging that growth will depend on the preferences of customers and the pace of international action (DISER, 2021).

Climate science has drawn a robust link between cumulative emissions of greenhouse gases and global temperature levels. The link between cumulative emissions and temperature levels allows a carbon budget to be calculated. This is the remaining amount of net emissions (i.e. all global sources of emissions minus all global sinks of emissions) that can occur before today's concentration of greenhouse gases increases to the concentration associated with potential temperature outcomes.

However, the distribution of this carbon budget across different human activities requires additional judgements about a wider range of social, economic and technological factors and consumer and policy choices. Strategies to achieve emissions reductions include transitioning from fossil fuels without CCS to very low-or zero-carbon energy sources, such as renewables or fossil fuels with CCS, demand side measures and improving efficiency, reducing non-CO_2 emissions, and deploying carbon dioxide removal (CDR) methods to counterbalance residual greenhouse gas

[46] Export from the Wood Mackenzie LNG Carbon Emissions Tool available from: https://www.woodside.com/docs/default-source/our-business---documents-and-files/pluto---documents-and-files/wood-mackenzie-lng-carbon-emissions-tool.pdf

[47] Paris Agreement: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf

[48] 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)

[49] 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))

[50] 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)

emissions. Pathways to limit warming therefore show different combinations of sectoral mitigation strategies consistent with a given warming level.

As a result the demand for oil and gas in climate-related scenarios that could limit global warming to 1.5°C or 2°C is uncertain. For example in the AR6-WG3 report, the IPCC stated that in pathways that limit warming to 1.5°C (with a greater than 50% probability and with no or limited overshoot) the potential global use of gas in 2050 ranges from 30% above 2019 levels to 85% below them with a median 45% decline.

Woodside considers that a stable energy transition will be one in which energy is affordable and reliable, as well as lower carbon. The NRC facility, together with the new well at Lambert West (LDA-02), will provide an incremental volume of hydrocarbons to Australian and international markets during its estimated remaining field life (to 2027). 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. Further, field life of the reservoirs comprising the NRC facility shall not extend beyond estimated field life (estimated as 2027, and up to 2028 to allow for uncertainty in reservoir performance), which contributes to global emissions reductions from beyond this point in time.

Woodside is a signatory to several global initiatives which are complementary to our corporate approach to methane emissions management, which include OGMP (2024), Oil and Gas Climate Initiative Aiming for Zero Methane Emissions (OGCI Near-Zero) and the Methane Guiding Principles (MGP, 2022), which are voluntary, international multi-stakeholder partnerships between industry and non-industry organisations. Woodside will pursue compliance with these commitments at the Angel facility in line with the control measures (C.8.5) (refer to Internal Context above, and key control measure.

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
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 incorporated into the key control measures.
National Pollutant Inventory (NPI) Reporting Annual air pollutant reporting	The requirements of annual NPI reporting are incorporated into the key control measures.
Conservation Management Plan for the Blue Whale 2015–2025 Management action A3.1: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica Conservation Advice Balaenoptera borealis Sei Whale Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica Conservation Advice Balaenoptera physalus Fin Whale Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica	As described above, the predicted atmospheric and GHG emissions from the NRC facility are considered de minimis, with no link to climate change impacts on Australian or International receptors. Therefore, the NRC facility is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale 2015–2025 (CoA, 2015a), Conservation Advice for Sei Whale (TSSC 2015a), Conservation Advice for Fin Whale (TSSC, 2015b), National Recovery Plan for the Southern Right Whale (DCCEEW, 2024b) or the Recovery Plan for Marine Turtles in Australia (CoA, 2017).

National Recovery Plan for the Southern Right Whale action area A3.1: Continue to meet Australia's international commitments to address causes of climate change, including greenhouse gas emissions Recovery Plan for Marine Turtles in Australia Management action A2.1: Continue to meet Australia's international commitments to address the causes of climate change	
Conservation Advice Rhincodon typus Whale Shark No specific strategies or actions identified Recovery Plan for the White Shark (Carcharodon carcharias) No specific strategies or actions identified Wildlife Conservation Plan for Seabirds No specific strategies or actions identified Wildlife Conservation Plan for Migratory Shorebirds No specific strategies or actions identified Marine bioregional plan for the North-west Marine Region No specific strategies or actions identified North-west Marine Parks Network Management Plan No specific zone rules identified	N/A.

Acceptability Statement: Greenhouse Gas Emissions

As per **Section 2.6.1**, decision type B, GHG emissions are acceptable if "ALARP" is 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 NRC 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 NRC facility are considered de minimis 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 MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 8 NRC facility GHG emissions shall assist in NWS Project achieving GHG	**C 8.1** Contract vessels complying with Marine Order 97 (Marine pollution prevention – air pollution).	**PS 8.1** Support vessels contracted whose practices comply with Marine Order 97 as applicable to vessel size, type and class.	**MC 8.1.1** Marine verification records.

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
reductions under reformed Safe Guard Mechanism (inclusive of legislated net zero emissions by 2050). No impact to air quality from air quality from atmospheric emissions during the Petroleum Activities Program greater than a consequence level of 'No lasting effect'[51].	**C 8.2** NGERS and NPI reporting – estimation of greenhouse gas, energy and criteria pollutants.	**PS 8.2** NWS activity emissions reported annually in accordance with NGERS and NPI.	**MC 8.2.1** NGERs and NPI reporting records.
	C 8.3 Apply for and manage net direct and indirect NWS GHG emissions to within the relevant baseline under the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015.	**PS 8.3** Manage net direct and indirect NWS GHG emissions to within the accepted baseline, under the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015.	**MC 8.3.1** Records demonstrate implementation.
	C 8.4 Forecast, measure, monitor and or estimate facility fuel and flare emissions (in accordance with NGERS/NPI and WMS procedures named in **Section 7.2.4.8**) to inform optimisation management practices and minimise environmental impact of emissions.	**PS 8.4.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5.2**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: P31 – Environmental Emissions Monitoring and Controls, to: • provide means of detection of environmental releases, emissions and discharges to prevent MEEs from manifesting over time, and/or as required to assure compliance monitoring and reporting equipment.	**MC 2.6.1** Refer to **Section 6.6.2**
		PS 8.4.2 Fuel and flare targets tracked, as required by WMS procedures named in **Section 7.2.4.8**.	**MC 8.4.1** Records demonstrate performance against annual fuel and flare targets.
		PS 8.4.3 Implement Production Optimisation and Opportunity Management Procedure for the NRC facility as a component of NWS operations.	**MC 8.4.2** Records demonstrate annual process is applied.

[51] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
		PS 8.4.5 Direct emissions from the operation of NRC facility are limited to 560 $ktCO_2e$ p.a.[52]	**MC 8.4.3** Records demonstrate emissions do not exceed this total.
	C 8.5 Implement relevant methane management measures at NRC.	**PS 8.5** Implement relevant methane management measures including: • Routine annual methane survey at NRC commencing with NRC methane inventory survey in 2025 to identify and evaluate methane sources in accordance with Woodside's POOMP and OGMP framework. Evaluate fugitive emissions identified and put in place actions to remediate sources where practicable. • Safety-driven LDAR - start-up leak checks. • Operational gas detection fixed and mobile, to identify methane sources. • Maintenance of CCTV and FFG function to minimise cold venting via flare • Baseline ground-up LDAR survey.	**MC 8.5.1** Records demonstrate relevant methane management measures are identified, assessed and implemented.
	C 8.6 Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon/alternative fuels.	**PS 8.6** Evaluation of tenders for support vessels considers emissions parameters.	**MC 8.6.1** Records demonstrate that emissions were considered in tender evaluations.
	C 8.7 Maintaining flare to maximise efficiency of combustion and minimise venting.	Refer to **PS 8.4.1**	**MC 2.6.1** Refer to **Section 6.6.2**

[52] The 560 $ktCO_2e$ p.a. is derived from the summation of annual fuel, flare and fugitive emissions, rounded up to nearest thousand.

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 8.8 Manage vessel speed to reduce fuel combustion.	**PS 8.8** Vessel speed will be managed to reduce fuel consumption where practicable.	**MC 8.8.1** Records demonstrate speed of support vessels managed
EPO 9 Woodside to support customers and suppliers to reduce their GHG emissions by complying with relevant Corporate Woodside policies, including those designed to monitor market developments related to hydrocarbons in the energy transition.	**C 9.1** Woodside supporting customers and suppliers to reduce their GHG emissions by: Promote global measurement and reporting by participating in industry collaboration initiatives to mature, harmonise and advocate for transparent measurement and reporting. Advocacy for policy frameworks that enable a stable approach to carbon emissions management. Working with the natural gas value chain to reduce methane emissions in third party systems (e.g. regasification and distribution), such as through the adoption of the Methane Guiding Principles. Promoting the role of LNG in displacing higher carbon intensity fuels. Supporting the development of new technologies to reduce higher carbon intensive energy sources. Monitoring the global energy outlook including the demand for lower carbon intensive energy such as LNG and displacing higher carbon intensive fuels.	**PS 9.1** Support customers and suppliers to reduce their GHG emissions, is implemented., is implemented.	**MC 9.1.1** Progress will be reported in Woodside's annual disclosures, to industry standard, for example ISSB or equivalent

6.6.8 Routine Light Emissions: Light Emissions from the Facility and Support Vessels

Context		
Platform Lighting – **Section 3.7.6.1** Operational Flaring – **Section 3.7.7** Support Vessels – **Section 3.8**	Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 0** Cultural Values and Heritage – **Section 4.9**	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-economic*	*Decision Type*	*Consequence / Impact*	*Likelihood*	*Risk Rating*	*ALARP Tool*	*Acceptability*	*Outcome*
Light emissions from the NRC facility (including flaring) and support vessels						✓	✓	A	F	-	-	GP PJ	Broadly Acceptable	**EPO 10**

Description of Source of Impact

Lighting is used to allow safe operations during night hours, as well as to communicate the presence of the NRC facility and support vessels to other marine users (i.e. navigation lights). Lighting is required for safe operation and cannot reasonably be eliminated.

The distance to the horizon at which lighting from the NRC facility will be directly visible can be estimated using the formula below:

$$horizon\ distance = 3.57\ x\ \sqrt{height},$$

where 'horizon distance' is the distance to the horizon at sea level in kilometres, and 'height' is the height above sea level of the light source in metres. Using this formula, the approximate distances at which the NRC facility production deck and flare tower tip will be visible at sea level are:

- ~18.90 km from the NRC facility production deck;
- ~42 km from the NRC facility flare tower.

Operations

There are external light sources installed throughout the NRC facility, as well as support vessels. Most external lighting is directed towards working areas such as the production deck, or the back deck of vessels. The production deck of NRA is approximately 23 m above sea level and NRB comprises an integrated float over deck elevated ~30 m above sea level. The highest point of the NRC facility is the top of the flare tower at NRB reaching ~135 m above sea level. External lighting of vessels is typically at lower heights above sea level than for the NRC facility. External vessel lighting is usually reduced to improve night vision of bridge crew.

A relatively small quantity of gas is required to be continuously flared associated with purge and pilot of the flare system and disposal of waste streams which are not recovered to the process. There is no planned venting of

hydrocarbons from the NRC facility during normal operations. Intermittent flaring may occur via the HP flare during emergency, manual depressurisation, and subsea flowline depressurisation.

The ASV has the majority of its lighting sources located on the main accommodation decks below the bridge at heights extending from ~47 m to ~100 m above sea level (whilst at operating draft). Therefore, the majority of the lighting is approximately at, or below, the level of the most significant light source on the riser platform (the flare tower tip). Accordingly, cumulative light from the ASV and riser platform will not be visible beyond approximately 36 km from the facilities.

IMMR Activities

During IMMR activities, underwater lighting is generated over short periods of time whilst 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 vicinity of the ROV and vessels.

Cumulative Light Sources

Lighting may also arise from other facilities and associated activities not included in this EP. These include the nearby Okha FPSO, Angel, GWA, and Pluto Riser Platform which may result in slightly elevated ambient light levels.

Impact Assessment

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

Receptors that have important habitat present within a 20 km buffer of the PAA 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 (NLPG). 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 (Commonwealth of Australia, 2020).

Light emissions can affect fauna in two main ways:

- Behaviour: many organisms are adapted to natural levels of lighting and the natural changes associated with the day and night cycle as well as the 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: organisms 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 act to override natural cues, leading to disorientation.

Marine fauna within the Offshore Facility Operational Area are predominantly pelagic fish and zooplankton, with a low abundance of species such as turtles and large whales transiting through the area. There is no known critical habitat within the PAA for EPBC listed species, although there are BIAs (listed in **Section 0**) that overlap the Offshore Facility Operational Area.

Seabirds

Artificial lighting can attract and disorient seabird species resulting in species behavioural changes (e.g., circling light sources or disrupted foraging) as well as injury or mortality near the light source as a result of collision (Longcore and Rich, 2004; Gaston *et al*., 2014). The PAA may be occasionally visited by seabirds and migratory shorebirds. There is no emergent land that could be used for roosting or nesting habitat in the PAA. The NRC facility has been operational for over 30 years, and in that time no large groups of birds have been observed on either platform. The environmental impact associated with seabirds attracted to artificial light, and hence diverted from their migratory pathway is considered to be localised with no lasting effect.

Black (2005) reported on two cases of mass seabird mortalities from striking of ships in the Southern Ocean. In both cases, mortalities occurred when the vessel was at anchor near seabird colonies and conducting night deck operations during periods of reduced visibility. There are no seabird colonies in the PAA, therefore support vessels operating at night are not expected to have the same impact as the vessels described by Black (2005). Breeding BIAs for the wedge-tailed shearwater as well as roseate and fairy tern overlap the Export Trunkline Operational Area (

Table 4-13). However, support vessels will mainly operate in this area intermittently and for short durations in connection with IMMR activities.

The nearest landfall is the Dampier Archipelago, which at closest point is ~10 km south of the Export Trunkline Operational Area. The foraging BIA for the wedge-tailed shearwater overlaps the Export Trunklines Operational Area, with a minor overlap with the Offshore Facility Operational Area. As such, wedge-tailed shearwaters may occur within the PAA (**Section 4.6.5**). Adult shearwaters are vulnerable to artificial lighting during the breeding cycle, when returning to and leaving the nesting colony to maintain nesting sites or forage. Foraging wedge-tailed shearwaters may be attracted to sources of light emissions to feed on fish drawn to the light, however, the species feeds

predominantly during the day (Catry *et al*., 2009). Migratory shorebirds may be present in or fly through the region between July and December, and again between March and April as they complete migrations between Australia and offshore locations (Commonwealth of Australia, 2015). The risk associated with collision from seabirds or migratory shorebirds attracted to artificial lighting is considered to be low, impacts are expected to be limited to localised behavioural disturbance to isolated individuals, with no displacement from important habitat.

The most vulnerable life stages for seabirds and migratory shorebirds are nesting adults or fledglings. Nesting or fledgling seabirds and migratory shorebirds are vulnerable to artificial lighting within 20 km of the nesting location (Commonwealth of Australia, 2020). For shearwater species, fledglings are predominantly impacted by onshore lighting sources, which can override sea finding cues and attract fledglings further inland, preventing them from reaching the sea (Mitkus *et al*., 2018; Telfer *et al*., 1987). Artificial light can also impact important behaviour of nesting adults (e.g., adult nest attendance, maintaining nest sites) or confuse shearwater species, resulting in injury or mortality as a result of birds colliding with structures (Cianchetti-Benedetti *et al*., 2018; Rodriguez *et al*., 2017). As the PAA is 7 km from the nearest emergent land at the Dampier Archipelago, impacts to adult nesting or fledgling seabirds and migratory shorebirds are not expected. No nesting activity has been identified on the NRC facility. Artificial light from the Petroleum Activities Program is not predicted to disrupt critical breeding behaviours within important nesting habitat or displace seabirds from nesting habitat.

Marine Turtles

Hatchlings

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

The Offshore Facility Operational Area does not contain any known Habitat Critical for the Survival of the Species for any species of marine turtle. Nesting BIAs for the hawksbill and green turtles are 7 km and 10 km, respectively from the Export Trunkline Operational Area. Further, the Export Trunkline Operational Area overlaps nesting Habitat Critical for the Survival of marine turtles for the flatback, green and hawksbill turtle. These areas identify environments for which species inhabit for critical behaviours and are represented by 60 km, 20 km and 20 km buffers, respectively.

The closest known nesting area for marine turtles, is ~100 km from the Offshore Facility Operational Area. Given that the greatest distance from where external lighting from the NRC facility is visible is ~42 km, direct light from the NRC facility will not reach any nesting location. Sky glow (particularly from flaring) is also unlikely to be visible at the closest nesting locations resulting in no behavioural impact (i.e., not biologically relevant). Even in the scenarios where these areas may be affected, the light source is located directly offshore in the same direction that emerging hatchlings would be heading in during normal sea-finding behaviour, meaning that no significant misorientation or disorientation would occur.

Since the Offshore Facility Operational Area is located ~110 km from turtle nesting beaches in the Montebello and Lowendal Islands, the risk of significant numbers of dispersing hatchlings becoming attracted to direct light or sky glow from support vessels is not considered credible. This is supported by the findings of a desktop lighting impact assessment for the Scarborough Project (also located on the North West Shelf), demonstrating that at a range of 50 km, the density of dispersing hatchlings is expected to be low and very few individuals will be at risk of attraction (PENV, 2020). For any isolated individuals potentially attracted to light spill from support vessels, following sunrise, any effect of these light sources on hatchlings will be eliminated allowing dispersal behaviour to resume.

Given the nature of the light emitted from the NRC facility and support vessels, and the distance to the nearest landfall (and nearest significant rookeries), artificial light is not expected to be directly visible to hatchling turtles, therefore, impacts to individuals in this life stage are not credible.

Adults

Artificial lighting may affect the location that turtles emerge to access a beach, the success of nest construction, whether nesting is abandoned, and even the seaward return of adults (Salmon *et al*., 1995a, 1995b; Salmon and Witherington, 1995). However, such lighting is typically from residential and industrial development overlapping the coastline, rather than offshore from nesting beaches. It is acknowledged that marine turtles may be present in the PAA in low densities and that internesting buffers overlap the Export Trunkline Operational Area. However, the closest nesting sites are ~100 km from the Offshore Facility Operational Area and given the water depth of the PAA (30 - 162 m), turtles are unlikely to be foraging. It is acknowledged that marine turtles may be present transiting the PAA in low densities, however, no impacts to nesting turtles will occur due to light generated during the Petroleum Activities Program.

Fish

Lighting from the presence of the NRC facility and support vessels may result in the localised aggregation of fish. These aggregations are considered localised and temporary and any long-term changes to fish species composition

or abundance is considered highly unlikely. This localised increase in fish extends to those comprising the whale shark's diet. However, given that a large proportion of the diet comprises krill and other planktonic larvae, it is unlikely that a light source would lead to a significant increase in whale shark abundance in the vicinity of the facility or vessels. Similarly, any localised impacts to marine fish are not expected to impact on any commercial fishers in the area.

Cultural Values and Heritage

Through consultation and review of available literature (**Section 4.9**), Woodside understands that marine fauna that may be affected by light emissions, such as turtles and plankton, are culturally important to Traditional Custodians. Traditional Custodians value these species both tangibly as well intangibly as they can be considered a resource or linked to songlines and dreaming stories. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have obligation to care for a species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country.

For example, activities that impact turtle populations and their marine environment may have an indirect impact on some Indigenous communities if they deplete hunting areas and threaten local food security (Delisle *et al.*, 2018:251). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes results in reduced sightings (e.g., through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO, 2003).

As described above, potential impacts to marine fauna are predicted to be at an individual level, which are not considered to be ecologically significant at a population level. Impacts are not expected to occur to significant proportions of the populations of the species, nor expected to result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. (See **Section 6.10** for further details).

Cumulative Impacts

Cumulative light impacts have the potential to arise from other facilities and associated activities not included in this EP. These include the nearby Okha FPSO, Angel, GWA, and Pluto Riser Platform which may result in slightly elevated ambient light levels.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[53]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
None identified.				
Good Practice				
Implement a Seabird Management Plan that includes: • standardisation and maintenance of record keeping and reporting of seabird interactions • procedures on seabird intervention, care and management • regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES).	F: Yes. CS: Minimal.	Potential for slight reduction in the likelihood of seabird attraction to vessels and facility resulting in a reduced likelihood of bird strikes.	Potential benefits outweigh cost/sacrifice.	Yes **C 10.1**
Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	F. Yes. Lighting is typically appropriate for navigation and safety.	Given the potential impacts to turtles during this activity is insignificant, implementation of this control would not result in a reduction in consequence.	While the control does not result in significant reduction of impacts, it is good practice and not at significant cost.	Yes **C 10.2**
Well unloading acceptance criteria that define the well objectives will be established	F: Yes. CS: Standard practice.	Eliminates unnecessary flared volumes and corresponding emissions (light and GHG).	Benefits outweigh cost/ sacrifice.	Yes **C 10.3**

[53] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[53]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Professional Judgement – Eliminate				
No external lighting during Petroleum Activities Program.	F: No. Light management is consistent with that required to provide a safe working environment on-board the facility and support vessels. Lighting is required to enable monitoring of the platform from NRC. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Substitute external lighting with light sources designed to minimise impacts to seabirds, shorebirds and marine turtles: • Use flashing/ intermittent lights instead of fixed beam. • Use motion sensors to turn lights on only when needed. • Use luminaires with spectral content appropriate for the species present. • Avoid high intensity light of any colour.	F: Yes. Replacement of external lighting with lighting appropriate for turtles and seabirds is technically feasible, although is not considered to be practicable. CS: Significant cost/sacrifice. The retrofitting of all external lighting on the facilities, etc, would result in considerable cost and time expenditure. Considerable logistical effort to source sufficient inventory of the range of light types onboard the facilities.	Given the potential impacts to turtles, nesting seabirds and fledglings during this activity are insignificant, implementation of this control would not result in a reduction in consequence. Potential for minor reduction in impact to individual foraging seabirds that may transit the PAA, as outlined in the NLPG.	Grossly disproportionate. Implementation of the control requires considerable cost/sacrifice for minimal environmental benefit. The cost/sacrifice outweighs the benefit gained.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[53]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
No flaring during Petroleum Activities Program.	F: No. While not a routine activity, the ability to flare hydrocarbons is a safety critical requirement on-board the facility. Note, Woodside is committed to reducing flaring, and has developed annual internal facility flare targets against which progress is monitored (see **Section 6.6.7**). CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
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 the facility and support vessels, and from flaring, 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.				
Demonstration of Acceptability				
Acceptability Statement: The impact assessment has determined that, given the adopted controls, routine light emissions from external lighting on the NRC facility and support vessels represent a localised impact /disturbance to marine fauna within the PAA. BIAs for whale shark foraging and wedge-tailed shearwater breeding areas overlap the Offshore Facility Operational Area. The Export Trunkline Operational Area also overlaps BIAs for the roseate and fairy tern, wedge-tailed shearwater, and turtle species (**Table 4-8, Table 4-9** and **Table 4-13**), for which potential light impacts from support vessels may be emitted. Conservation advice and the NLPG were taken into consideration during the impact evaluation and the Petroleum Activities Program is deemed to be consistent with these. 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 if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of light emissions to a level that is broadly acceptable.				

EPOs, EPSs and MC for NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 10 No impact to protected species from artificial light emissions during the Petroleum Activities Program greater than a consequence level of 'No lasting effect'[54].	**C 10.1** Implement a Seabird Management Plan.	**PS 10.1** 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. • Follow regulatory reporting requirements of seabird (unintentional death of or injury to seabirds that constitute MNES).	**MC 10.1.1** Records demonstrate Seabird Management Plan implemented.
	C 10.2 Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	**PS 10.2** Lighting will be limited to that required for safe work/navigation.	**MC 10.1.2** Inspection verifies no excessive light being used beyond that required for safe work/ navigation.
	C 10.3 Well unloading acceptance criteria that define the well objectives will be established.	**PS 10.3** Flaring restricted to a duration necessary to achieve the well objectives.	**MC 10.3.1** Records demonstrate flaring was restricted to a duration necessary to achieve the well objectives.

[54] *Defined in* ***Section 2.6.3***.

6.7 Unplanned Activities (Accidents, Incidents, Emergency Situations) – Major Environmental Events

For Woodside's production facilities, an analysis is undertaken to identify, classify and analyse major environmental events (MEEs), as described in **Section 2.7**. This extra level of rigour is applied to ensure sufficient controls for operational activities are in place for risks with potential Level B and above consequences as per Woodside's Risk Matrix. MEEs are evaluated against credible worst-case scenarios that may occur when all controls are absent or have failed. The risks considered in this section have therefore been identified as MEEs due to the potential for significant consequence. These sources of risk are subject to additional consideration in accordance with the process described in **Section 2.6.4**. Risks associated with the Petroleum Activities Program that have been classified as MEE's are summarised in **Section 6.7.1** and include a range of hydrocarbon spills. The quantitative spill risk assessment methodology used to assess the potential consequence of credible spills is outlined in **Section 6.7.2**. Credible hydrocarbon spills that have not been classified as MEE's are assessed in **Section 6.8**. Risks that do not meet the MEE definition, although screened out of the MEE process, are still evaluated for ALARP and risk acceptability using the methodology described in **Section 2.8**.

6.7.1 Major Environmental Events Overview

This section provides an overview of MEEs each of which are summarised in **Table 6-13**.

Table 6-13: Major Environmental Events for the NRC Operations EP

No.	Hazard	Top Event
MEE-01	Hydrocarbons in reservoirs, wells, wellheads and xmas trees	Well loss of containment
MEE-02	Hydrocarbons in subsea equipment (pipelines, manifolds, flowlines, risers and associated equipment)	Subsea equipment loss of containment
MEE-03	Hydrocarbons in topsides equipment	Topsides loss of containment
MEE-04	Hydrocarbons in subsea and topsides equipment and marine vessels	Loss of structural integrity
MEE-05	Hydrocarbons in wells, subsea and topsides equipment and marine vessels	Loss of marine vessel separation
MEE-06	Hydrocarbons in wells, subsea and topsides equipment	Loss of control of suspended load from platform

MEEs are described in detail in bowties in **sections 6.7.3** to **6.7.8.** These sections also include a summary of the hazard description, hazard management, emergency response, ALARP summary and a list of SCE barriers identified on the bowties. Each group of SCEs is listed under Technical Performance Standards, with consistent naming conventions used across Woodside's process safety management processes (e.g., pipeline integrity SCEs are captured as P09 – Pipeline Systems).

Section 6.7.9 presents the generic SCE Failure and Human Error bowties that illustrate the causes, outcomes and controls/barriers in place to manage potential common cause event (CCE) failure mechanisms for MEE controls associated with generic SCE equipment failure (CCE-01), and also human error (CCE-02). Controls and specific measures are listed for both bowties. Human Error is managed via the WMS and a generic Human Error bowtie is included in the MEE section for completeness.

ALARP is demonstrated through controls and barriers being analysed for selection based on their independence and prioritised in accordance with the Hierarchy of Controls where controls further up the hierarchy take precedence over controls further down. Controls are further analysed to

consider the type of effect they provide (i.e. technical or administration). ALARP controls presented for MEE bowties are labelled in accordance with Type of Effect classifications presented in **Table 6-14**.

Woodside has developed a tailored ALARP position for hydrocarbon spill response, including EPOs, EPSs and MC for preparedness and response. The response arrangements are a mitigative control that applies to all MEEs where a hydrocarbon release may credibly occur. The hydrocarbon spill response arrangements are described in **Appendix D**.

Table 6-14: Barrier Hierarchy and Type of Effect

Type of Effect	Legend	Description
Elimination (Technical)		Elimination controls form the 'first line of defence'. They eliminate the underlying hazard and therefore are the most effective category of control measure. If practicable, they should be selected in preference to any other type, as their existence removes the need for any other controls (e.g., a corrosion-resistant metal could replace the original material of construction).
Elimination (Administration)		
Prevention (Technical)		Prevention controls are intended to remove certain causes of incidents or reduce their likelihood. The corresponding hazard remains, but the frequency of incidents involving the hazard is lowered (e.g., introduction of regular maintenance programs can prevent the development of events involving the hazard). Where hazards and causes could not be 'eliminated', controls are required to prevent them from leading to unwanted events and consequences.
Prevention (Administration)		
Detection (Technical)		Detection controls are those that identify a potentially hazardous scenario (e.g., a change in operating parameters), allowing initiation of procedures or systems to prevent the cause occurring. Controls that detect the occurrence of events are often critical to being able to respond with other control measures that reduce the propagation of the events. Detection controls themselves often provide no actual control other than the awareness of the need to respond.
Detection (Administration)		
Reduction / Control (Technical)		Reduction controls are intended to limit the scale and consequence of incidents. They include systems that detect incidents and take some action (e.g., to reduce the rate of leakage of a toxic gas) and also aspects such as inter-unit separation that prevent escalation of fire and explosion incidents. As there is always potential for controls to fail, additional measures are required to limit the scale and severity of any unwanted event or outcome that may arise, by providing the ability to intervene and limit the propagation of the events.
Reduction / Control (Administration)		
Mitigation (Technical)		Mitigation controls take effect in response to an incident. They include controls that lessen the significance or damage caused by an unwanted event. Such controls only take effect after the hazardous event and outcomes occur. Mitigation controls are generally those designed to protect personnel against the consequences of a hazard or to aid in recovering from the effects of the hazard.
Mitigation (Administration)		

6.7.2 Quantitative Spill Risk Assessment Methodology

As part of the risk identification process, Woodside identified the range of credible hydrocarbon spill scenarios that may occur during the Petroleum Activities Program. Scenarios that have been classified as MEEs are assessed in **Sections 6.7.2** to **6.7.8**. Scenarios that are not classified as MEEs (as explained in **Section 6.7.1**) are assessed in **Section 6.8**.

Location-specific quantitative hydrocarbon spill modelling was undertaken by RPS, on behalf of Woodside, using a three-dimensional (3D) hydrocarbon spill trajectory and weathering model, SIMAP (Spill Impact Mapping and Analysis Program). This model is designed to simulate the transport, spreading and weathering of specific hydrocarbon types under the influence of changing meteorological and oceanographic forces. The model does this by releasing particles representing hydrocarbons from a specified point within the model and subsequently transported.

A stochastic modelling scheme was followed in this study, whereby SIMAP was applied to simulate the defined credible spill scenarios using time-series of current and wind data representative of prevailing conditions in the study area over the course of a year. Combined results of simulations were then statistically analysed the outputs of which enable mapping of risk envelopes of potential impact at ecologically relevant thresholds.

The model simulates surface and sub-surface releases and uses the unique physical and chemical properties of a hydrocarbon type to calculate rates of evaporation and viscosity change, including the tendency to form oil in water emulsions. The unique transport and dispersion of surface slicks and in water components (entrained and dissolved) is tracked and calculated 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 hydrocarbon particles 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 selected threshold concentrations.

Hydrocarbon spill modelling assessments undertaken by RPS undergo initial sensitivity testing to determine the appropriate time to add to the simulation after the cessation of the spill is anticipated. The amount of time following the spill is based on the time required for the modelled concentrations to practically drop to below threshold concentrations anywhere in the model domain. This assessment is done by post-processing the sensitivity test results and analysing time-series of median and maximum concentrations in the water column and on the surface.

6.7.2.1 Hydrocarbon Characteristics

A summary of the characteristics of the hydrocarbons used as the basis for the modelling studies and subsequently used to inform the assessment of credible hydrocarbon spills is provided in **Table 6-17**.

Additional detail on the characteristics of these hydrocarbons is also provided below.

Table 6-15: Characteristics of the hydrocarbon types used for modelling and ecotoxicological studies (RPS 2024a; 2024b)

Hydrocarbon Type	Density (g/cm3)	Viscosity (cP) at 20°C	Component	Volatile (%)	Semi-volatile (%)	Low volatility (%)	Residual (%)	Aromatics (%)
			Boiling point (°C)	<180	180-265	265-380	>380	Of whole oil <380
Perseus Condensate	0.768 at 15°C	0.55	% of total	80.5	12.8	6.1	0.6	12.5
			% aromatics	6.9	3	2.6	-	-
NWS Condensate	0.760 at 25°C	0.765	% of total	61.2	23.7	12.7	2.3	16.3
			% aromatics	9.1	4.2	3	-	-
Marine Gas Oil	0.829 at 25°C	4.00*	% of total	6	34.6	54.4	5.0	3.0
			% aromatics	1.8	1.0	0.2	-	-

** at 25°C*

6.7.2.2 Perseus Condensate

Perseus Condensate is primarily made of high proportions of highly volatile hydrocarbons. In general, about 80.5% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 12.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 6.1% should evaporate over several days (265 °C < BP < 380 °C). Approximately 0.6% of the oil is shown to be persistent (RPS, 2024a).

Soluble, aromatic, hydrocarbons contribute approximately 12.5% by mass of the whole oil. Around 6.9% by mass is highly soluble and highly volatile. A further 3% by mass is semi volatile, and a further 2.6% has low volatility. . These compounds dissolve more slowly but tend to persist in soluble form for longer. Discharge onto the water surface will favour the process of evaporation over dissolution under calm sea conditions, but increased entrainment of oil and dissolution of soluble compounds can be expected under breaking wave conditions (RPS, 2024a).

The mass balance forecast for the constant-wind case (see **Figure 6-4** for Perseus Condensate) shows that approximately 93.5% of the oil is predicted to evaporate within 24 hours. Under calm conditions, the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes (RPS, 2024a).

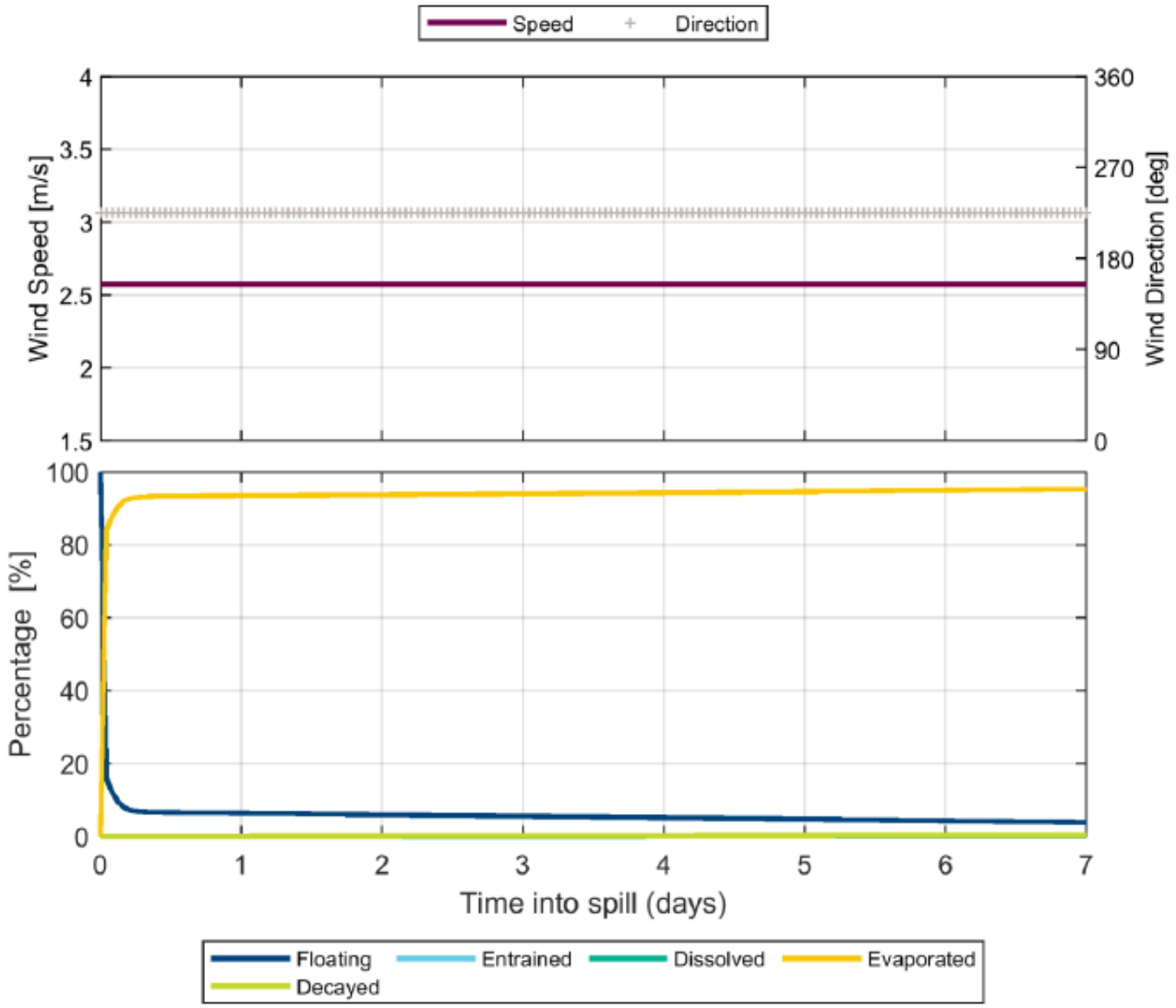


Figure 6-4: Proportional mass balance plot representing the weathering of Perseus condensate spilled onto the water surface as a one-off instantaneous release (50 m^3) and subject to a constant 5 kn (2.6 m/s) wind at 27°C water temperature and 25 °C air temperature

Under the variable-wind case (see **Figure 6-5**), where the winds are of greater strength on average, entrainment of Perseus Condensate into the water column is indicated to be greater than the constant wind case. Approximately 24 hours after the spill, around 5.7% of the oil mass is forecast to have entrained and a further 90.6% is forecast to have evaporated. The increased level of entrainment in the variable-wind case will result in higher percentage of biological and photochemical degradation. The decay of floating slicks and oil droplets in the water column occur at an approximate rate of 0.58% per day with an accumulated total of ~3.7% after 7 days, in comparison to the rate of ~0.06% per day and an accumulated total of 0.39% after 7 days in the constant wind-case. The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s) (RPS, 2024a).

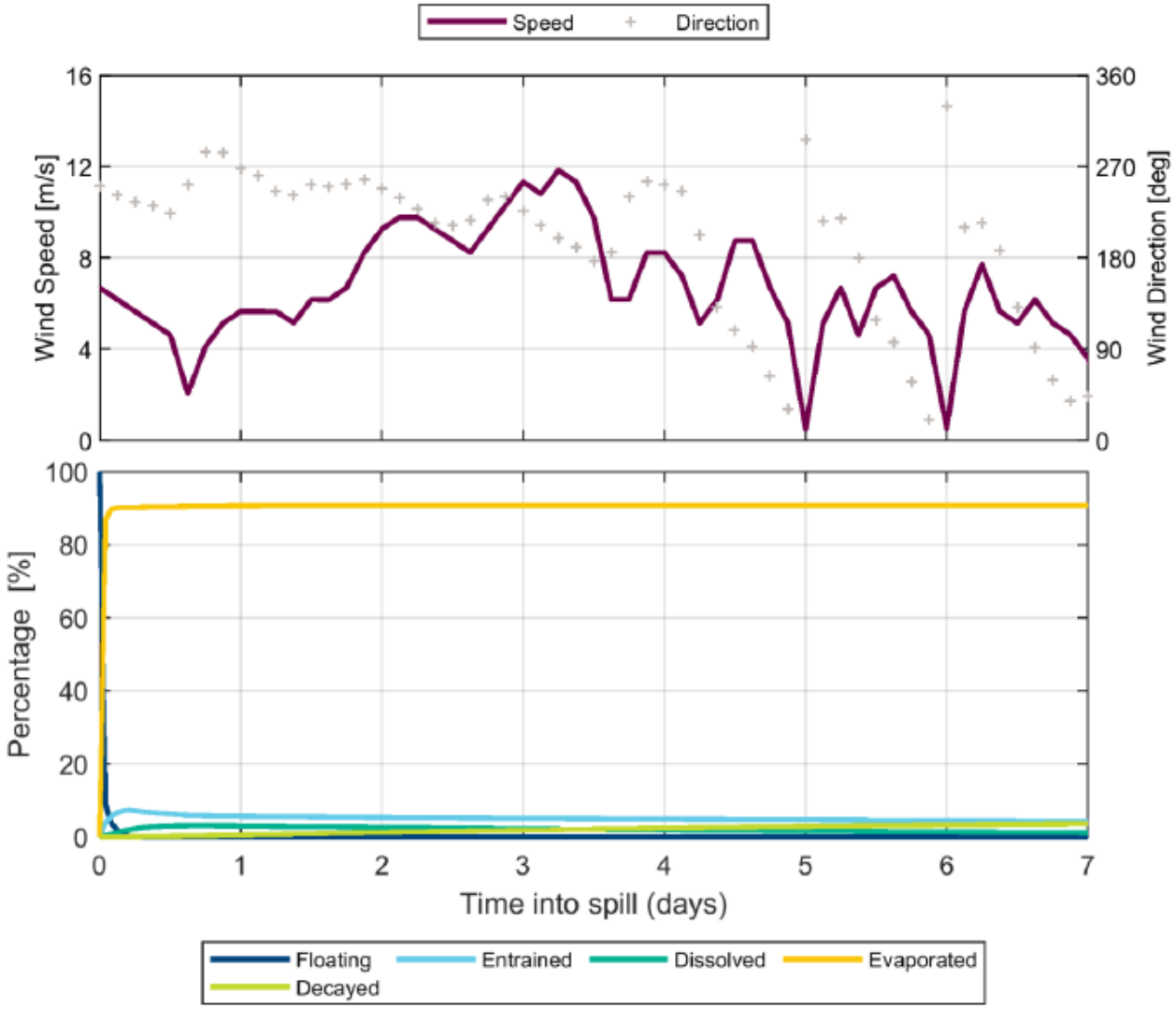


Figure 6-5: Proportional mass balance plot representing the weathering of Perseus condensate spilled onto the water surface as a one-off instantaneous release (50 m^3) and subject to variable wind at 27ºC water temperature and 25 ºC air temperature

6.7.2.3 GWA Export Condensate

GWA Export Condensate is made of high proportions of highly volatile hydrocarbons. In general, about 61.2% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 23.7% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 12.7% should evaporate over several days (265 °C < BP < 380 °C). Approximately 2.3% of the oil is shown to be persistent (RPS, 2024a).

Soluble, aromatic, hydrocarbons contribute approximately 16.3% by mass of the whole oil. Around 9.1% by mass is highly soluble and highly volatile. A further 4.2% by mass is semi volatile, and a further 3% has low volatility. These compounds dissolve more slowly but tend to persist in soluble form for longer. Discharge onto the water surface will favour the process of evaporation over dissolution under calm sea conditions, but increased entrainment of oil and dissolution of soluble compounds can be expected under breaking wave conditions (RPS, 2024a).

The mass balance forecast for the constant-wind case (see **Figure 6-6** for GWA Export Condensate) shows that approximately 85.1% of the oil is predicted to evaporate within 24 hours. Under calm conditions, the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes (RPS, 2024a).

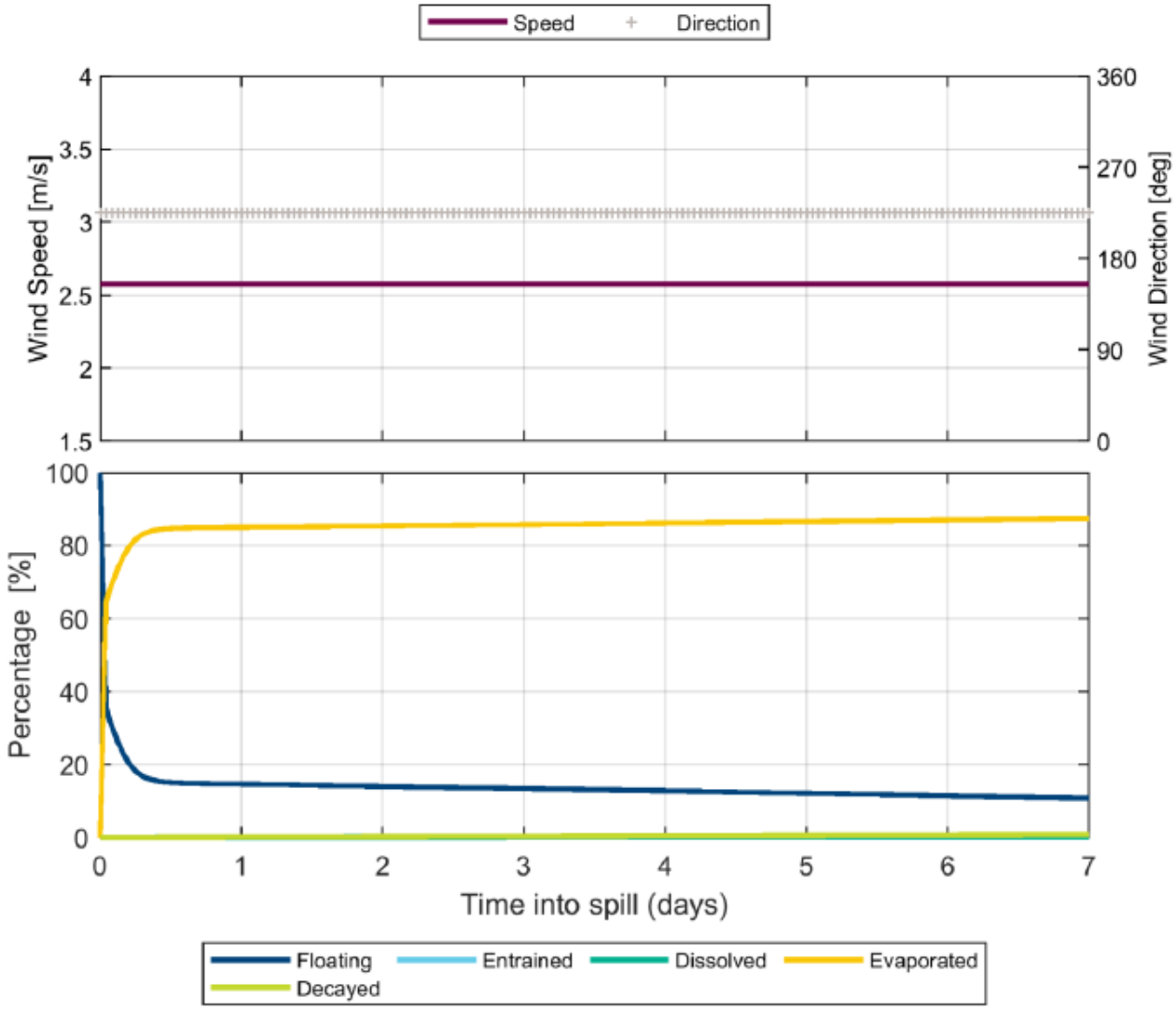


Figure 6-6: Proportional mass balance plot representing the weathering of GWA Export Condensate spilled onto the water surface as a one-off instantaneous release and subject to a constant 5 kn (2.6 m/s) wind at 27ºC water temperature and 25 ºC air temperature

Under the variable-wind case (see **Figure 6-7**), where the winds are of greater strength on average, entrainment of GWA Export Condensate into the water column is predicted to be greater than the constant wind case. Approximately 24 hours after the spill, around 17.2% of the oil mass is forecast to have entrained and a further 77.3% is forecast to have evaporated. The increased level of entrainment in the variable-wind case will result in higher percentage of biological and photochemical degradation, where the decay of floating slicks and oil droplets in the water column occur at an approximate rate of 1% per day with an accumulated total of ~7% after 7 days, in comparison to the rate of ~0.13% per day and an accumulated total of 0.88% after 7 days in the constant wind-case.

The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s) (RPS, 2024a).

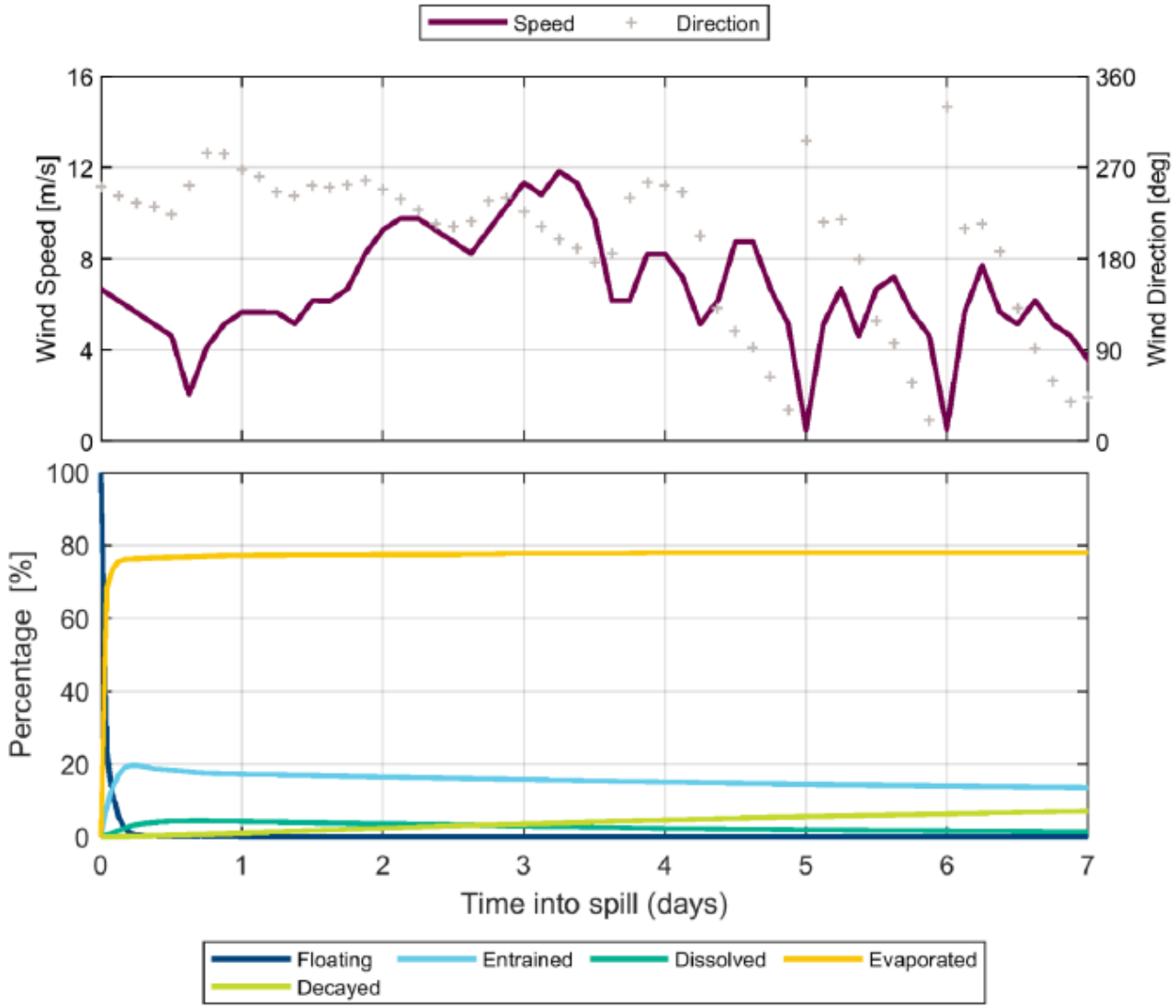


Figure 6-7: Proportional mass balance plot representing the weathering of GWA Export Condensate spilled onto the water surface as a one-off instantaneous release and subject to variable wind at 27ºC water temperature and 25ºC air temperature

6.7.2.4 Marine Diesel

Marine diesel oil (MDO) is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. Modelling for marine diesel utilised information for a comparable Marine Gas Oil (MGO). In favourable conditions, about 6% of the oil mass should evaporate within the first 12 hours (boiling point < 180°C); a further 34.6% should evaporate within the first 24 hours (180°C < boiling point < 265°C); and a further 54.4% 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% (RPS, 2024b).

The mass balance forecast for the constant-wind case for MDO shows that about 38% 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 (RPS, 2024b).

Under the more realistic variable-wind case in **Figure 6-6**, where the winds are of greater strength, entrainment of MDO into the water column is indicated to be significant. About 24 hours after the spill, around 74% of the oil mass is forecast to have entrained and a further 26% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds tend to remain entrained beneath the surface under conditions that generate wind waves (about >6 m/s) (RPS, 2024b).

The increased level of entrainment in the variable-wind case results in a higher percentage of biological and photochemical degradation. 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 (RPS, 2024b).

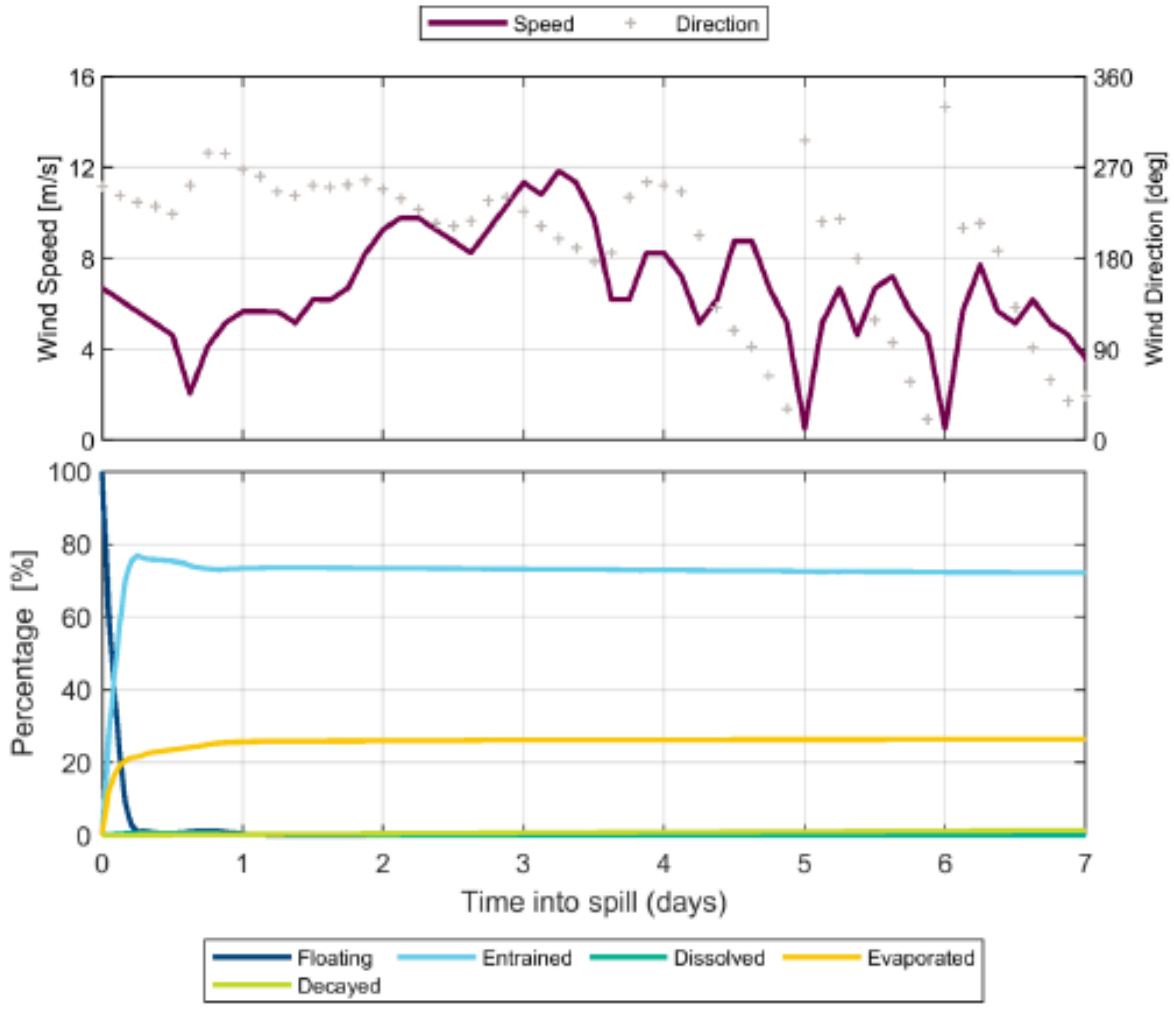


Figure 6-8: Proportional mass balance plot representing the weathering of marine diesel spilled onto the water surface as a one-off release (50 m^3 over one hour) and subject to variable wind at 27ºC water temperature and 25ºC air temperature

6.7.2.5 Spill Risk Assessment Thresholds

The outputs of location-specific spill modelling are used to assess the environmental consequence by delineating which areas of the marine environment could be exposed to hydrocarbon levels exceeding ecologically relevant threshold concentrations. The summary of the locations where these thresholds could be exceeded by any of the simulations modelled is defined as the EMBA. The EMBA covers a larger area than is likely to be affected during any single spill event, as a range of time-series forced by varied metocean conditions is simulated.

Weathering of hydrocarbons differ and depends on the inherent characteristics of hydrocarbons and where in the water column they are located. An EMBA is represented for each of surface, entrained and dissolved hydrocarbons. Together, the EMBA enveloped are combined to define the spatial extent for which the existing environment is described in **Section 4**.

The spill modelling outputs are presented as areas where ecologically relevant threshold for surface, entrained and dissolved hydrocarbons are exceeded. 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 shoreline accumulated hydrocarbons. An additional threshold has been included to define the envelope within which socio-cultural impacts may occur. This threshold is based on impacts to visual amenity and is defined as surface oil exceeding 1 g/m^2. Each of these hydrocarbon thresholds are presented in **Table 6-16** and described in the sub-sections below.

Table 6-16: Summary of thresholds used to analyse spill model simulations

Hydrocarbon Type	EMBA					Socio-cultural EMBA
	Surface Hydrocarbon (g/m^2)	Entrained hydrocarbon (ppb)	Dissolved aromatic hydrocarbon (ppb)	Accumulated hydrocarbons (g/m^2)	Surface Hydrocarbon (g/m^2)	*Accumulated hydrocarbons (g/m^2)*
Condensate	10	100	50	100	1	10 - 100
Marine Diesel	10	100	50	100	1	10 - 100

6.7.2.6 Scientific Monitoring

A planning area for scientific monitoring is also described in **Section 5.7** of the Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**). 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.

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

6.7.3 Unplanned Hydrocarbon Release: Well Loss of Containment (MEE-01)

Context		
Reservoir and Wells – **Section 3.5.2** Platform Well Management and Maintenance Activities – **Section 3.11.2**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 0** Protected Places – **Section 4.8** Cultural Values and Heritage – **Section 4.9** Socio-economic– **Section 4.10**	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-economic***	***Decision Type***	***Consequence***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Release of hydrocarbons resulting from loss of platform well containment.		✓	✓	✓	✓	✓	✓	B	B	2	H	LCS GP PJ RBA CV SV	Acceptable if ALARP	**EPO 11**

Description of Source of Risk

Background

Well loss of containment can lead to an uncontrolled release of reservoir hydrocarbons and well fluids to the environment (i.e., well blowout). Woodside has identified a well blowout as the scenario with the worst-case credible environmental outcome as a result of this event. Due to the potential consequences, a loss of well containment during operations is considered to be an MEE (MEE-01).

A loss of well containment during operations could occur due to a variety of causes including:

- internal corrosion
- external corrosion
- erosion
- overpressure of the annuli
- fatigue
- loss of well integrity during interventions;
- loss of well integrity during hydraulic workover;
- premature detonation of explosives during intervention on platform wells;
- loss of control of suspended load from vessel (operating near subsea wells) (MEE-05; **Section 6.7.7**)
- anchor drag.

A number of common failure causes due to human error and SCC failures are presented in the generic Human Error and SCE Failure bowties in **Section 6.7.9**.

There are three escalation scenarios (from other MEEs) that can also lead to loss of well containment on the NRC, including:

• loss of structural integrity (MEE-04 – **Section 6.7.6**);

• loss of marine vessel separation (MEE-05 – **Section 6.7.7**); and

• loss of control of suspended load (MEE-06 – **Section 6.7.8**).

Loss of Well Containment – Credible Scenario

The Petroleum Activities Program includes production from a series of platform and subsea wells (**Section 3.5.2**).

One credible worst-case loss of well containment scenarios was identified for the Petroleum Activities Program:

- Scenario 1 - Well blow-out at surface – platform well PEN05 (Perseus), condensate release.

The subsea Persephone wells have been excluded from this scenario as these subsea wells exhibit water inflow and outflow dynamics. Consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well.

For a platform well blow-out, the platform well PEN05 (Perseus) was selected as the release location for Scenario 1, which was modelled for a duration of 77 days. The 77-day surface well blow-out period is a conservative estimate based on the estimated time to drill a relief well under the Mutual Aid Memorandum of Understanding and is consistent with the timing to drill a relief well following the Montara loss of well control in 2009 (refer to **Appendix D:** Oil Spill Preparedness and Response Mitigation Assessment Appendix D: Oil Spill Preparedness and Response Mitigation Assessment for additional discussion of relief well timing). The characteristics of NWS condensate were used as the basis in the modelling for both scenarios; refer to **Section 6.7.2** for additional information on modelling methods and environmental impact, thresholds and hydrocarbon characteristics justifications.

Table 6-17: Summary of worst-case loss of well containment hydrocarbon release scenarios

Scenario	Hydrocarbon	Duration	Depth (m)	Latitude	Longitude	Total Condensate Release Volume (m^3)
Scenario 1 – Well blowout at surface – platform well PEN05 (Perseus) condensate release	Perseus Condensate	77 days	Surface	19°35'3.23"S	116°08'17.06" E	19,863

Decision Type, Risk Analysis and ALARP Tools

Woodside implements industry standard practice in well design and construction. In the company's recent history, it has not experienced any well integrity events that have resulted in significant releases or significant environmental impacts. Woodside has never experienced a worst-case loss of well containment in its operational history.

Decision Type

Decision Type B has been applied to this risk under the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk based tools including the bowtie methodology (described in **Section 2.6.3**) and hydrocarbon spill trajectory modelling (described in **Section 6.7.2**). Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and consultation (**Section 5**).

The release of hydrocarbons as a result of well loss of containment is considered a Major Environment Event (MEE-01). The hazard associated with this MEE is hydrocarbons in reservoirs, wells, wellheads and xmas trees for NRC platform wells or subsea wells tied-back to the NRC facility.

Quantitative Spill Risk Assessment

Spill modelling of the worst-case credible loss of well containment spill scenario was undertaken by RPS, to determine the fate of hydrocarbons released based on the assumptions in **Section 6.7.2**. Modelling was undertaken over all seasons to address year-round operations. This is considered to provide a conservative estimate of the EMBA and

the potential impacts from the identified worst-case credible release volumes for all loss of well containment scenarios.

Hydrocarbon Characteristics

Hydrocarbon characteristics of NRC condensate are provided in **Table 6-15** and described in more detail in **Section 6.7.2.1**.

Likelihood

Woodside has a good history of implementing industry standard practice in well design and construction. In the Company's 70-year history, it has not experienced any well integrity events that have resulted in significant releases or significant environmental impacts.

The blowout likelihood was evaluated using Blowout and Well release Frequencies based on SINTEF offshore blowout database as analysed in the IOGP, 2019 Study *Risk Assessment Data Directory Blowout Frequencies – Report 434-02* (September 2019). This uses data from 1980-2014 to determine likelihood for well blowouts and releases. For a gas well, the IOGP study calculated gas blowout frequency during production as 7.20x10-5 per year per well.

Given consideration for up to 29 platform and 2 subsea gas wells and using SINTEF/IOGP database, blowout during production occurs with a frequency of 2.2E-03 per year which gives a likelihood level of 3 "Possible" on the Woodside Risk Matrix. An order of magnitude reduction has been taken to reduce the likelihood of significant environmental impacts to Level 2 "Unlikely", for the following reasons:

- SINTEF and Lloyds data presented in the IOGP 2019 Blowout Frequencies study considers Production well integrity events between 1980 and 2011, with some additional data from the North Sea between 2011 and 2014. Frequencies are informed by incidents which occurred in Gulf of Mexico, which occurred prior to standards improvement following the Macondo event. Similarly, improvements in standards have been achieved in the North Sea compared to the pre-Macondo era. External causes are excluded for subsea production wells, as causes discussed appears to only be relevant to dry-tree/platform wells.
- For the international blowout incidents analysed, these are expected to have resulted in varied release outcomes with varied flow and environmental consequence outcomes – not all are aligned with a worst case unconstrained full-bore blowout, from the highest flowing well, nor necessarily required a relief well to remediate (which is the basis for this risk assessment)
- Woodside have adopted international best practice – the O&G UK Well Lifecycle Integrity Guidelines (post-Macondo industry improvements). Woodside continue to apply a rigorous well integrity management program (refer WOMP) as required under WMS and Australian regulations, including verification, and testing of key barriers including SSSVs.
- Additionally, when considering likelihood from an 'Experience' perspective, and considering the significant environmental consequence likelihood as the outcome of a blowout event; historical blowouts resulting in major impacts to the environment have not occurred "once or twice at Woodside". Hence, alignment with Unlikely likelihood classification is deemed appropriate.

The overall risk ranking for this MEE is "High".

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon were considered during the impact assessment for a worst-case loss of well containment (presented in the following section). These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill, and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence Assessment

Environment that May Be Affected

Table 6-18 lists the key receptor locations and sensitivities potentially contacted above the socio-cultural EMBA and EMBA impact thresholds by the loss of well containment scenario with summary hydrocarbons spill contact.

Surface Hydrocarbons

Hydrocarbon spill modelling for surface hydrocarbons indicated that concentrations equal to or greater than the 10 g/m^2 ecological threshold could not be found. The probability of films arriving at receptors were <1%.

Entrained Hydrocarbons

Entrained oil concentrations equal to or greater than the 100 ppb ecological thresholds are predicted to be found up to 61 km (west) from the release location. However, no receptors are predicted to be contacted by entrained hydrocarbons at or above ecological thresholds.

Dissolved Hydrocarbons

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 50 ppb ecological threshold are predicted to be found up to about 504 km (south-west) from the release location. Eleven receptors were predicted to be contacted by dissolved hydrocarbons; Rankin Bank (17%), Montebello AMP (11%), Tryal Rocks (3%), Montebello MP (1%), Barrow Island MMA (2%), Gascoyne AMP (1%), Ningaloo AMP (1%), Barrow Island MP State (1%), Montebello Islands MP (1%), Ningaloo Coast World Heritage MP (1%), and Rosily Shoals (1%).

Accumulated Hydrocarbons

A number of receptors were predicted to receive shoreline hydrocarbons above the 10 g/m^2 threshold in the spill modelling. Those receptors with the highest probability of contact at the 100 g/m^2 ecological threshold are Exmouth coastline (2%), Bedwell Island (2%), Cunningham Island (2%), Clerke Reef (Rowley Shoals MP) (2%), Imperieuse Reef (Rowley Shoals MP) (2%), , Ningaloo Coast World Heritage MP (2%), Ningaloo MP State (2%), Derby West Kimberley (1%), Karratha coastline (1%), and Northern Pilbara islands and shoreline (1%) (RPS 2024a).

Summary of Potential Impacts to Environmental Value(s)

Figure 4-1 presents the full extent of the EMBA for loss of well containment (within which all other credible hydrocarbon spill EMBAs are contained); i.e., the sensitive receptors and their locations that may be exposed to hydrocarbons (surface, entrained, dissolved and accumulated) at or above the set threshold concentrations in the unlikely event of a loss of well containment during the Petroleum Activities Program. Loss of containment has the potential to result in a change water quality which can impact receptors within the EMBA. Details of these receptors are outlined in **Section 4**. The potential biological and ecological impacts of an unplanned hydrocarbon release as a result of a loss of well containment during the Petroleum Activities Program are discussed in the following sections.

Table 6-18: EMBA – key receptor locations and sensitivities potentially contacted above impact thresholds by the loss of well containment scenario with summary hydrocarbons spill contact (RPS 2024a)

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 (%)[55]					
		Physical		*Biological*																				*Socio-economic 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 hydrocarbon (1 to 10 g/m²)*	*Accumulated hydrocarbons (10 to 100 g/m²)*	*Surface hydrocarbons (≥10 g/m2)*	*Entrained hydrocarbons (≥100 ppb)*	*Dissolved hydrocarbons (≥50 ppb)*	*Accumulated hydrocarbons (≥ 100 g/m2)*
Australian Marine Parks	Gascoyne MP	✓	✓					✓							✓	✓			✓			✓	✓	✓		✓			✓						1	
	Montebello MP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓						11	
	Ningaloo MP	✓	✓	✓	✓	✓	✓	✓		✓					✓	✓			✓		✓	✓	✓	✓	✓	✓		✓	✓						1	
Coastlines	Broome	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			5				
	Carnarvon	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			2				
	Dampier Archipelago	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			1				
	Derby - West Kimberley	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			7				
	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2				2
	Eighty Mile Beach - Broome	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			3				
	Karratha	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			1				1
	Indonesia	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			2				
	Middle Pilbara – Islands and Shoreline			✓	✓	✓					✓	✓			✓	✓	✓		✓	✓		✓	✓		✓	✓		✓				1				

[55] Worst case probability.

	North Broome Coast	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			3				
	Northern Pilbara – Islands and Shoreline			✓	✓	✓					✓	✓			✓	✓	✓		✓	✓		✓	✓		✓	✓		✓				1				1
	Nusa Tenggara Timur	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			2				
	Port Hedland	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			1				
	Port Hedland - Eighty Mile Beach	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			1				
	Wyndham - East Kimberley	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			2				
	Derby - West Kimberley	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			7				
Indigenous Protected Area	Bardi Jawi	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			5				
	Dambimangari	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			2				
	Karajarri	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			3				
	Uunguu	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			1				
	Yawuru	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			2				
Islands	Airlie Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Bonaparte Archipelago	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Browse Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Cassini Island	✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Dampier Archipelago Islands (Angel, Cohen, Conzinc, Eaglehawk, Enderby, Gidley, Hauy, Kendrew, Legendre, Malus, Rosemary)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	East Pilbara Island (Bezout, Delambre)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Montebello Islands (Hermite Island)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			5				
	Lacepede Islands (Middle Island)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2				
	Little Turtle Islet	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Lowendal Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Maret Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Mary Anne Group	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Muiron Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	North Turtle Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				

	Passage Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Pulau Dana	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2				
	Ragnard Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Southern Pilbara Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Barrow and Boodie Islands	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		1			1	
	Northern Pilbara Islands (Bedout)	✓	✓	✓	✓		✓	✓		✓	✓	✓			✓	✓			✓	✓		✓	✓	✓	✓	✓		✓	✓	✓		2				
	Bedwell Island (Rowley Shoal Islands)	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓	✓			✓	✓		✓	✓	✓	✓	✓		✓	✓			19				2
	Cunningham Island	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓	✓			✓	✓		✓	✓	✓	✓	✓		✓	✓			35				2
Marine Parks	Clerke Reef (Rowley Shoals MP)	✓	✓	✓	✓		✓	✓		✓	✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			19				2
	Barrow Island MMA	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓					2	
	Barrow Island MP (State)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					1	
	Eighty Mile Beach MP (State)	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Imperious Reef (Rowley Shoals MP)	✓	✓	✓	✓		✓	✓		✓	✓	✓				✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			35				2
	Lalang-garram / Camden Sound MP	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2				
	Montebello Island MP	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			5			1	
	Muiron Islands MMA	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓			1				
	Ningaloo Coast WH	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2			1	2
	Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2				2
	North Kimberley MP	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				2
National Park	Cape Range	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓		✓	✓			2				
Nature Reserve	Boodie, Double Middle Islands Nature Reserve NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		1				
	Coulomb Point	✓	✓		✓	✓					✓	✓	✓		✓	✓			✓	✓	✓	✓	✓		✓	✓		✓	✓			3				
	Great Sandy Island NR	✓	✓		✓	✓			✓		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓		✓	✓		✓	✓			1				
	Jinmarnkur Kulja	✓	✓		✓	✓					✓	✓	✓		✓	✓			✓	✓	✓	✓	✓		✓	✓		✓	✓			1				
	North Sandy Island NR	✓	✓		✓	✓			✓		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓		✓	✓		✓	✓			1				
	Scott Reef NR	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓			5				

Ramsar	Eighty-mile Beach	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			3					
	Roebuck Bay	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1					
Reefs, Shoals and Banks	Rankin Bank	✓	✓	✓			✓	✓		✓					✓	✓	✓			✓		✓		✓	✓	✓		✓							17	
	Rosily Rocks	✓	✓	✓			✓	✓		✓					✓	✓	✓			✓		✓		✓	✓	✓		✓							1	
	Sandy Islet	✓	✓	✓			✓	✓		✓		✓		✓	✓	✓	✓			✓		✓		✓	✓	✓		✓			1					
	Scott Reef South	✓	✓	✓			✓	✓		✓					✓	✓	✓			✓		✓		✓	✓	✓		✓			5					
	Tryal Rocks	✓	✓	✓			✓	✓		✓					✓	✓	✓			✓		✓		✓	✓	✓		✓							3	

Open Water Environment (Near Spill Area)

Air Quality

A hydrocarbon release during a loss of well containment has the potential to result in localised, temporary reduction in air quality and contribution of greenhouse gases to the global concentration of these gases in the atmosphere. Potential impacts from reduced air quality are expected to be minor, short-term and predominantly localised.

There is potential for possible human health effects for workers in the immediate vicinity of atmospheric emissions if there is a hydrocarbon release during a loss of well containment. The ambient concentrations of methane and VOCs released from diffuse sources is difficult to accurately quantify, although the behaviour and fate is predictable in open offshore environments as it is dispersed rapidly by meteorological factors such as wind and temperature. Methane and VOC emissions from a hydrocarbon release in such environments are rapidly degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals.

Due to the unlikely occurrence of a loss of well containment; the temporary nature of any methane or VOC emissions (from either gas surfacing or weathering of liquid hydrocarbons from a loss of well containment); the predicted behaviour and fate of methane and VOCs in open offshore environments; and the significant distance from the Offshore Facility Operational Area to the nearest sensitive air shed (town of Dampier, approximately 130 km away), the potential impacts are expected to be minor and short-term.

Water Quality

Water quality would be affected in the offshore environment within the EMBA due to hydrocarbon contamination from entrained, dissolved and surface hydrocarbons. Due to the weathering processes of the hydrocarbons, impacts to water quality are anticipated to be minor long term and/or significant short term as a result of hydrocarbon contamination above background levels.

Marine Sediment Quality

In the event of a surface loss of well containment from the platform, spill modelling predicts that a large mass (93.3%) of the oil is predicted to evaporate over the first couple of days depending on the prevailing conditions. The heavier (low volatility) components of the oil will remain entrained into the upper water column due to wind-generated waves and can subsequently resurface if wind-waves abate. It is unlikely that marine sediment quality will be impacted in the event of loss of well containment surface release.

In the event of loss of a subsea well containment (MEE-02, see **Section 6.7.4**), studies of hydrocarbon concentrations in deep sea sediments in the vicinity of a catastrophic well blowout indicate hydrocarbon from the blowouts can be incorporated into marine sediments (Romero *et al*., 2015). Proposed mechanisms for hydrocarbon contamination of sediments include sedimentation of hydrocarbons and direct contact between submerged plumes and the seabed (Romero *et al*., 2015). In the event of a major hydrocarbon release at the seabed, modelling indicates that a pressurised release of condensate would atomise into droplets that would be transported into the water column to the surface. As a result, the extent of potential impacts to the seabed area at and surrounding the release site would be confined to a localised footprint. Marine sediment quality would be reduced as a consequence of hydrocarbon contamination for a small area within the immediate release site for a long to medium term.

Benthic Fauna Communities

As described above, in the event of a surface loss of well containment from the platform, spill modelling predicts that most of the entrained, dissolved and surface hydrocarbons would be found in the upper water column. It is unlikely that benthic fauna communities would be impacted in the event of loss of well containment surface release.

In the event of a loss of well containment at the seabed (MEE-02, see **Section 6.7.4**), the spill modelling predicted hydrocarbon droplets would be entrained in a gas plume, transporting them through the water column and to the upper water column and sea surface. As a result, the low sensitivity benthic communities associated with the unconsolidated, soft sediment habitat within the PAA are generally not expected to be exposed to released hydrocarbons. A localised area of impact relating to the hydrocarbon plume at the point of release is however predicted, which would result in a small area of seabed and any associated epifauna and infauna being exposed to hydrocarbons. Impacts to benthic communities within the PAA would subsequently be limited to the immediate area around the release site and may include lethal or sub-lethal impacts.

Within the offshore waters of the EMBA, impacts to benthic fauna on the seafloor are not anticipated as hydrocarbons are not expected to gravitate toward the seafloor (as described above).

Benthic fauna at geomorphic features located within the water column such as shoals and banks may be impacted by dissolved and/or entrained hydrocarbons. Spill modelling indicates that Rankin Bank, for example, would be contacted by dissolved hydrocarbons, and Glomar Shoals KEF is located within the EMBA These features support benthic communities that may be impacted by these hydrocarbons. Notably, given the depths of Rankin Bank and Glomar Shoals KEF, the potential for impacts to benthic communities is considered to be significantly reduced given hydrocarbons will primarily feature in the upper water column.

Demersal and pelagic fish species are associated with the following offshore features within the PAA and/or EMBA (described in **Appendix C-1**):

- Ancient coastline at the 125 m depth contour KEF– overlaps the Offshore Facility Operational Area
- Glomar Shoals KEF– 25 km east of the Export Trunkline Operational Area, 40 km east of the Offshore Facility Operational Area
- Continental slope demersal fish communities KEF – 67 km west of the Export Trunkline Operational Area and Offshore Facility Operational Area
- Rankin Bank – about 54 km south-west of the Offshore Facility Operational Area.

These KEFs and geomorphic features may host relatively diverse or abundant fish assemblages compared to the otherwise relatively featureless continental shelf habitats of the NWMR. Impacts to KEFs are discussed below. In summary, impacts to these features are considered to be unlikely. Indirect impacts due to decreased habitat quality at these KEFs to pelagic and demersal fish communities are, therefore, considered unlikely. Impacts to pelagic fish (associated with receptors such as Glomar Shoals and Rankin Bank) from hydrocarbons are described herein.

Fish mortalities are rarely observed to occur as a result of hydrocarbon spills (International Tanker Owners Pollution Federation, 2011b). This has generally been attributed to the possibility that pelagic fish are able to detect and avoid surface waters underneath hydrocarbon spills by swimming into deeper water or away from the spill affected areas. Fish that have been exposed to dissolved aromatic hydrocarbons are capable of eliminating the toxicants once placed in clean water. Hence individuals exposed to a spill are likely to recover (King *et al*., 1996). Where fish mortalities have been recorded historically, the spills (resulting from the groundings of the tankers Amoco Cadiz in 1978 and the Florida in 1969) have occurred in sheltered bays.

Laboratory studies have shown that adult fish are able to detect hydrocarbons in water at very low concentrations, and large numbers of dead fish have rarely been reported after hydrocarbon spills (Hjermann *et al*., 2007). This suggests that juvenile and adult fish are capable of avoiding water contaminated with high concentrations of hydrocarbons. However, sub-lethal impacts to adult and juvenile fish may be possible, given long-term exposure (days to weeks) to polyaromatic hydrocarbon (PAH) concentrations (Hjermann *et al*., 2007). While modelling of the loss of well containment indicates the potential EMBA for dissolved hydrocarbons is relatively extensive, no time-integrated exposure metrics were modelled; given the oceanographic environment within the EMBA, PAH exposures in the order of weeks for pelagic fish are not considered credible.

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

Fish are perhaps most susceptible to the effects of spilled oil in their early life stages, particularly during egg and planktonic larval stages, which can become entrained in spilled oil. Contact with oil droplets can mechanically damage feeding and breathing apparatus of embryos and larvae (Fodrie and Heck, 2011). The toxic hydrocarbons in water can result in genetic damage, physical deformities and altered developmental timing for larvae and eggs exposed to even low concentrations over prolonged timeframes (days to weeks) (Fodrie and Heck, 2011). More subtle, chronic effects on the life history of fish as a result of exposure of early life stages to hydrocarbons include disruption to complex behaviours such as predator avoidance, reproductive and social behaviour (Hjermann *et al*., 2007). Prolonged exposure of eggs and larvae to weathered concentrations of hydrocarbons in water has also been shown to cause immunosuppression and allows expression of viral diseases (Hjermann *et al*., 2007). PAHs have also been linked to increased mortality and stunted growth rates of early life history (pre-settlement) of reef fishes, as well as behavioural impacts that may increase predation of post-settlement larvae (Johansen *et al*., 2017). However, the effect of a hydrocarbon spill on a population of fish in an area with fish larvae and/or eggs, and the extent to which any of the adverse impacts may occur, depends greatly on prevailing oceanographic and ecological conditions at the time of the spill and its contact with fish eggs or larvae.

Hydrocarbons above ecological thresholds may subsequently impact populations located near to the release location for the worst-case spill scenario, with lethal impacts not considered likely in this offshore environment.

Protected Places

Receptors

The Australian Marine Parks (AMPs) listed in **Section 4.8** may be affected by a worst-case spill scenario. The AMPs were predicted to potentially be contacted by dissolved hydrocarbons in the event of a worst-case spill scenario are the Gascoyne, Montebello and Ningaloo Marine Parks. The Marine Parks (MPs) predicted to potentially be contacted by dissolved hydrocarbons are the Barrow Island MMA, Barrow Island MP (State), Montebello Island MP, and Ningaloo Coast WH. The MPs predicted to potentially be contacted by accumulated hydrocarbons are the Rowley Shoals MP (Clerke Reef, Imperious Reef), Ningaloo Coast WH, Ningaloo MP (State), and North Kimberley MP. The

Dampier MP and Eighty Mile Beach MP was also predicted to be contacted by entrained hydrocarbons in spill Scenarios 2 and 3 (MEE-02).

Two Ramsar wetlands were predicted to be potentially contacted by accumulated hydrocarbons within socio-cultural thresholds (10 – 100 g/m^2); Eighty Mile Beach Ramsar and Roebuck Bay Ramsar. These two Ramsar wetlands do not intersect the PAA. Hydrocarbons that exceed ecological thresholds may impact Ramsar wetlands located near to the release location for the worst-case spill scenario, with lethal impacts to Ramsar wetlands not considered likely in this offshore environment for this scenario.

Impacts

The Montebello Marine Park is the closest AMP to the Offshore Facility Operational Area (55 km south) predicted to be contacted by hydrocarbons. Impacts to this AMP are discussed below. Impacts to the natural, cultural, heritage and socio-economic values of the other AMPs and MPs predicted to be contacted by hydrocarbons in a worst-case spill scenario are expected to be similar, however, of lower severity and duration due to their being at least 100 km further from the Offshore Facility Operational Area.

Montebello Marine Park

The Montebello Marine Park comprises an area of about 3,413 km², all of which is zoned as a Multiple Use Zone (IUCN VI). The AMP ranges in water depths from less than 15 m up to 150 m.

The Montebello Marine Park is significant as it contains habitats, species and ecological communities, representative of the Northwest Shelf Province. It overlaps with The Ancient Coastline at the 125 m Depth Contour KEF (see 'Key Ecological Features' below for a discussion of impacts to KEFs). The AMP provides connectivity between the deeper waters of the continental shelf and slope, and the adjacent Barrow Island and Montebello Islands State Marine Parks. A prominent seafloor feature in the AMP is Trial Rocks, which consists of two close coral reefs that are emergent at low tide. There is subsequently potential for impacts to shallow coral reef communities at Trial Rocks, as discussed in the section 'Marine Primary Producers – Coral Reef' above. The specific values of the AMP and associated impacts are summarised here.

Natural values – The AMP includes diverse benthic and pelagic fish communities and ancient coastline thought to be an important seafloor feature (KEF) and a migratory pathway for humpback whales (BIA). The AMP supports a range of species, including those listed as threatened, migratory, marine and/or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, internesting, foraging, mating and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks. Impacts to the relevant species and BIAs are discussed in the sections above.

Cultural values – There is limited information about the cultural significance of this AMP, however, it is noted that sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. Potential impacts to cultural values of the AMP will closely tie in with the impacts to the natural values of the Marine Park, as addressed above and below; and range from moderate mid-term potential impacts to major long-term potential impacts.

Heritage values – There are no World, National or Commonwealth heritage listings that apply to the AMP. Two historic shipwrecks are located within the Marine Park. Impacts to shipwrecks are discussed below under 'Cultural Heritage'.

Social and economic values – Tourism, commercial fishing, mining and recreation are important activities in the AMP. These activities contribute to the wellbeing of regional communities and the prosperity of the nation. Impacts to tourism and recreation within the AMP are discussed with regard to offshore and nearshore waters in the sections 'Tourism and Recreation' below.

A worst-case hydrocarbon spill scenario has the potential to result in impacts to these AMPs that range from moderate, medium-term to major, long-term, with the consequence severity dependent on the actual timing, duration and extent of a spill.

Key Ecological Features

The Ancient coastline at 125 m depth contour KEF overlaps the Offshore Facility Operational Area. The KEFs located within the EMBA and may be impacted by a worst-case hydrocarbon spill are the Ancient Coastline at 125 m Depth Contour, Glomar Shoal, Continental Slope Demersal Fish Communities, Exmouth Plateau, Canyons Linking the Cuvier Abyssal Plan and the Cape Range Peninsula and Commonwealth Waters Adjacent to Ningaloo Reef. The proximity of the KEFs to the PAA are listed in **Section 4.7,** the features of the KEFs are described in **Appendix C-1**.

Ancient coastline at 125 m depth contour

The Ancient Coastline, Continental Slope Demersal Fish Communities, Exmouth Plateau and Canyons linking the Cuvier Abyssal Plane and the Cape Range Peninsula are KEFs primarily defined by seabed geomorphological features and have been classified as KEFs in recognition of the potential for increased biological productivity and,

therefore, ecological significance. Potential impacts to these KEFs include the direct and indirect impacts to benthic fauna / habitats and associated impacts to demersal fish populations described in the sections above.

Notably, other than some small outcrops of hard substrate, no features indicative of the ancient coastline have been identified within the portion of this KEF overlapping the Offshore Facility Operational Area (as per **Section 4.7**).

Glomar Shoals KEF (essentially a buffer applied to Glomar Shoals KEF which has been discussed above) is located 40 km east of the Offshore Facility Operational Area and features marine primary producer habitat and site attached fishes, and provides foraging habitat for a number of species, as discussed under the respective sections above. The Commonwealth Waters adjacent to Ningaloo Reef are similarly important habitat for these animal groups. Impacts to water quality due to contamination from entrained and dissolved hydrocarbons may cause flow on effects within these ecosystems.

These KEFs cover extensive areas (as listed in **Appendix C-1**) and, should impacts to receptors within the KEFs (e.g., benthic communities) occur, these would be anticipated to be short lived with no permanent impacts to the KEF.

Protected Species

A number of cetaceans were identified as potentially occurring within the PAA and the EMBA (see **Section 0**). In the event of a loss of well containment; surface, entrained and dissolved hydrocarbons exceeding environmental impact threshold concentrations may drift across habitat for oceanic cetacean species and the migratory routes and/or BIAs of cetaceans considered to be MNES (e.g., humpback whale and pygmy blue whale north and southbound migrations). There is a small overlap of the southern right whale migration and reproduction BIAs in proximity to the North West Cape with entrained and dissolved oil exceeding thresholds, however no floating oil is present in this area and no hydrocarbons are predicted to enter the 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.

Cetaceans that have direct physical contact with surface, entrained or dissolved aromatic hydrocarbons may suffer surface fouling, ingestion of hydrocarbons (including from prey, water and sediments), aspiration of oily water or droplets and inhalation of toxic vapours (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016). This may result in the irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts and organs, impairment of the immune system, neurological damage (Helm *et al*., 2015), reproductive failure, adverse health effects (e.g., lung disease, poor body condition) and, potentially, mortality (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

Given cetaceans maintain thick skin and blubber, external exposure to hydrocarbons is more likely to result in irritation to the more exposed skin and eyes. Entrained hydrocarbons may also be ingested, particularly by baleen whales which feed by filtering large volumes of water. Fresh hydrocarbons (i.e., typically in the vicinity of the release location) may have a higher potential to cause toxic effects when ingested, while weathered hydrocarbons are considered to be less likely to result in toxic effects.

Given the non-persistent nature of the relevant hydrocarbons of Perseus Condensate (see **Section 6.7.2.1**) and the relatively small floating hydrocarbon release of the worst-case LOWC EMBA (RPS, 2024a) (see Figure 4-1), the area where potential impacts from inhalation and physical contact with surface slicks may occur would primarily be localised around the release location and impacts would most likely be expected to be limited to individuals that contact the slick, as discussed above. Notably, there was modelled overlap of surface hydrocarbons above the ecological threshold within the humpback whale migration and resting BIA, and the EIO pygmy blue whale distribution migration and foraging (high density) BIA offshore of Ningaloo Reef.

In a review of the impacts of large-scale hydrocarbon spills on cetaceans, it was found that exposure to oil from the Deepwater Horizon resulted in increased mortality to cetaceans in the Gulf of Mexico (DHNRDT, 2016), and long-term population level impacts to killer whales were linked to the Exxon Valdez tanker spill (Matkin *et al*., 2008). Given the nature of the condensate (compared with crude oil from these two spills) and relatively small nature of the surface slick, such exposure impacts to cetaceans may not eventuate.

Geraci (1988) has identified behavioural disturbance (i.e., avoiding spilled hydrocarbons) in some instances for several species of cetacean, suggesting that cetaceans have the ability to detect and avoid surface slicks. However, observations during spills have also recorded larger whales (both mysticetes and odontocetes) and smaller delphinids traveling through and feeding in oil slicks. During the Deepwater Horizon spill cetaceans were routinely seen swimming in surface slicks offshore (and nearshore) (Aichinger Dias *et al*., 2017).

Suitable habitat for oceanic toothed whales (e.g., sperm whales) and dolphins (e.g., long-snouted spinner dolphin) is broadly distributed throughout the NWMR and, as such, while these species may be present within the EMBA, impacts from a spill are unlikely to affect an entire population.

EIO pygmy blue whales and humpback whales are known to migrate seasonally through the EMBA. The EIO pygmy blue whale distribution BIA overlaps the Offshore Facility Operational Area and the humpback whale migration BIA overlaps the Export Trunkline Operational Area. A major spill event in June through to November would coincide with the humpback whale migration through the waters off the Pilbara, North West Cape and Shark Bay (outside the EMBA). A major spill in April to July or October to January would coincide with EIO pygmy blue whale migration. Both

the pygmy blue and humpback whales are baleen whales and are therefore most likely to be significantly impacted by toxic effects when feeding. However, feeding during migrations is typically low level and opportunistic, with most feeding for both species occurring in the Southern Ocean. Subsequently the risk of ingestion of hydrocarbons through feeding is low.

Migrations of both pygmy blue whales and humpback whales are protracted through time and space (i.e., the whole population will not be within the EMBA at any one time), and as such, a spill from a loss of well integrity (MEE-01) is not considered likely to affect an entire population.

Dugong

There are no BIAs or known areas of aggregation in the offshore waters of the EMBA for the dugong. A dugong calving BIA lies approximately 285 km south-west of the Offshore Facility Operational Area in the Exmouth Gulf.

Summary

A worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to offshore cetacean species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.

Marine Turtles

Five of the six marine turtle species were identified as potentially occurring within the EMBA, with a number of BIAs and Habitat Critical areas identified overlapping the Export Trunkline Operational Area and the EMBA.

Adult marine turtles exhibit no avoidance behaviour when they encounter hydrocarbon spills (National Oceanic and Atmospheric Administration, 2010). Contact with surface slicks, or entrained hydrocarbon can therefore result in hydrocarbon adherence to body surfaces (Gagnon and Rawson, 2010) causing irritation of mucous membranes in the nose, throat and eyes leading to inflammation and infection (National Oceanic and Atmospheric Administration, 2010). Oiling can also irritate and injure skin, which is most evident on pliable areas such as the neck and flippers (Lutcavage *et al*., 1995). A stress response associated with this exposure pathway includes an increase in the production of white blood cells and even a short exposure to hydrocarbons may affect the functioning of their salt glands (Lutcavage *et al*., 1995).

Hydrocarbons in surface waters may also impact turtles when they surface to breathe and inhale toxic vapours. Their breathing pattern, involving large 'tidal' volumes and rapid inhalation before diving, results in direct exposure to petroleum vapours which are the most toxic component of the hydrocarbon spill (Milton and Lutz, 2003). This can lead to lung damage and congestion, interstitial emphysema, inhalant pneumonia and neurological impairment (National Oceanic and Atmospheric Administration, 2010).

Given the hydrocarbon is expected to weather rapidly when released to the environment, relatively fresh entrained hydrocarbons (which are typically relatively close to the release location) are considered to have the greatest potential for impact. Given the non-persistent nature of the hydrocarbons and the relatively small floating hydrocarbon EMBA, the area where potential impacts from inhalation may occur would be localised around the release location. There is also minimal surface hydrocarbon contact with the marine turtle BIAs and Habitat Critical areas.

There are also no known areas of aggregation (i.e., BIAs, Habitat Critical to Survival) for marine turtles within the Offshore Facility Operational Area. Due to the offshore location and water depths within the Offshore Facility Operational Area, this area is unlikely to represent important habitat for marine turtles.

The EMBA overlaps a number of BIAs and some Habitat Critical to Survival areas for marine turtles. Marine turtles are, therefore, likely to be present in the offshore waters of the EMBA, particularly as they are a migratory species which often travel large distances during migration periods. Important areas of aggregation for foraging, nesting and mating are typically associated with nearshore islands along the Pilbara and Gascoyne coastlines, as opposed to offshore waters.

Summary

In the event of a loss of well containment, there is potential that surface, entrained and dissolved hydrocarbons exceeding environmental impact threshold concentrations will be present in offshore waters. Therefore, a hydrocarbon spill may disrupt a portion of marine turtle populations for the green, flatback, hawksbill, loggerhead and/or leatherback turtle. However, there is considered to be no threat to overall population viability given the non-persistent nature of predicted hydrocarbons.

Sea Snakes

A number of sea snake species which are listed Marine under the EPBC Act were identified by the PMST as potentially occurring within the EMBA, including the critically endangered leaf-scaled sea snake and short-nosed sea snake which are likely to occur within the Export Trunkline Operational Area.

Impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles and may include potential damage to the dermis and irritation to mucus membranes of the eyes, nose and throat (International Tanker Owners Pollution Federation, 2011a). They may also be impacted when

they return to the surface to breathe and inhale the toxic vapours associated with the hydrocarbons, resulting in damage to their respiratory system.

In general, sea snakes frequent the waters of the continental shelf area around offshore islands and potentially submerged shoals (water depths <100 m) (impacts described below). It is acknowledged that sea snakes may be present in the Export Trunkline Operational Area and within the EMBA. However, their abundance is not expected to be high in the offshore environment.

In summary, a hydrocarbon spill may have a minor disruption to some individuals in the offshore environment. Population level impacts to sea snake species are not, however, considered credible.

Sharks and Rays

A number of shark and ray species were identified as potentially occurring within the PAA and/or EMBA (see **Section 4.6.1**). Two foraging BIAs for the whale shark overlap with the EMBA. The foraging northward from Ningaloo along the 200 m isobath overlaps the Export Trunkline Operational Area, and the foraging high prey density in Ningaloo Marine Park overlaps the EMBA. Whale sharks are, therefore, likely to transit the open offshore waters within the Export Trunkline Operational Area and EMBA while they migrate to and from Ningaloo Reef between July and November.

Other listed Threatened pelagic species identified in the PMST report as potentially occurring within the EMBA include the white shark, dwarf sawfish, freshwater sawfish, green sawfish, grey nurse shark, scalloped hammerhead, and southern bluefin tuna. There are no known areas of aggregation for these species in the offshore waters of the EMBA.

Impacts to sharks and rays may occur through direct contact with hydrocarbons and contaminate the tissues and internal organs either through direct contact or via the food chain (i.e., consumption of prey). As gill breathing organisms, sharks and rays may be vulnerable to toxic effects of dissolved hydrocarbons (entering the body via the gills) and entrained hydrocarbons (coating of the gills inhibiting gas exchange). In the offshore environment, it is probable that pelagic shark species, such as the whale shark, are able to detect and avoid surface waters underneath hydrocarbon spills by swimming into deeper water or away from the affected areas.

Impacts to whale sharks from a hydrocarbon spill will depend on the timing of the spill; however, whale sharks as a pelagic species are expected to demonstrate avoidance behaviour and population level impacts are not anticipated.

Seabirds

A number of EPBC Act listed Threatened and/or Migratory seabird and shorebird species were identified by the PMST as potentially occurring within the PAA and/or EMBA. BIAs for the wedge-tailed shearwater, roseate tern, and fairy tern overlap the Export Trunkline Operational Area, and BIAs for the lesser crested tern lesser frigatebird and brown booby are found within the EMBA (see

Table 4-13).

Seabirds and migratory shorebirds are particularly vulnerable to contact with floating hydrocarbons, which may mat their feathers. This may lead to hypothermia from loss of insulation and ingestion of hydrocarbons when preening to remove hydrocarbons; both impacts may result in mortality (Hassan and Javed 2011). Notably, the credible loss of well containment scenarios result in a relatively small floating hydrocarbon EMBA which is primarily centred around the release location, with some sporadic surface hydrocarbons near to the Muiron Islands and offshore waters of Ningaloo Reef. Subsequently, the potential for seabird exposure to floating hydrocarbons is considered to be low. Migratory shorebirds are considered unlikely to interact with spilled hydrocarbons as they are not expected to stop over within the offshore waters surrounding the PAA during their migrations between mainland/island areas. Many seabirds and migratory shorebirds forage over extensive areas (some hundreds of kilometres out to sea) so individuals may be present. Seabirds which are roosting or resting on the NRC platform may also be impacted; however; these would be individuals and not populations.

Seabirds which plunge dive to feed on prey may contact entrained or dissolved hydrocarbons, most likely through ingestion of prey which are contaminated. Impacts to prey abundance as a result of hydrocarbons may also indirectly impact individuals.

There are several breeding BIAs for seabirds and migratory shorebirds that overlap with the EMBA, which are associated with breeding and nesting at locations along the Gascoyne and Pilbara coastlines (including near-shore islands). Breeding BIAs for the wedge-tailed shearwater, roseate tern, and fairy tern overlaps with the Export Trunkline Operational Area. It is likely that individual birds may, therefore, transit the PAA. Other species' BIAs are at least 79 km away from the Export Trunkline Operational Area and these species are less likely to occur within the PAA.

Given the relatively low area of floating hydrocarbons and the lack of key aggregation areas for migratory shorebirds and seabirds within the Operational Area, impacts at the population level are not anticipated. Individual animals may, however, be impacted with potential fatalities occurring from oiling.

Nearshore Waters (Mainland and Islands)
Marine Sediment Quality Dissolved hydrocarbons (at or above the defined thresholds) are predicted to potentially contact shallow, nearshore waters of identified islands and mainland coastlines (see **Table 6-18**). Shoreline hydrocarbons may also reach a number of islands, including the Barrow and Boodie Islands, Bedout Island and Bedwell Islands (Rowley Shoals) (full list of receptors provided in **Table 6-18**). Such hydrocarbon contact may lead to reduced marine sediment quality by several processes, such as adherence to sediment and deposition shores or seabed habitat.
Protected Species
Cetaceans Coastal populations of small cetaceans (e.g., the spotted dolphin) and dugongs are known to reside or frequent nearshore waters along the WA coastline and nearshore islands, including the Ningaloo Coast and at the Muiron Islands, Montebello and Barrow Island groups, and the Pilbara Southern Island Groups. These species may be impacted by entrained and dissolved hydrocarbons exceeding threshold concentrations, as well as sporadic areas of surface hydrocarbons near to Muiron Islands and Ningaloo Reef, in the event of a loss of well containment. The potential impacts of exposure from hydrocarbons for cetaceans and dugongs are as discussed above. More specifically, nearshore populations of cetaceans and dugongs are known to exhibit site fidelity and are often resident populations. Therefore, avoidance behaviour displayed by cetaceans and dugongs in nearshore areas may have greater impacts to population functioning. Geraci (1988) observed relatively little impacts beyond behavioural disturbance for nearshore species. <u>Humpback Whale</u> The humpback whale migration and resting on migration BIA overlaps the Export Trunkline Operation Area. The humpback whale resting area in the Exmouth Gulf lies just within the EMBA (due to modelled contact by entrained hydrocarbons at 100 ppb); however, it is about 288 km south-west of the Offshore Facility Operational Area and the EMBA is not representative of any one hydrocarbon spill. The likelihood of impacts occurring within this BIA are, therefore, considered low. <u>Dugong</u> Impacts in addition to those noted above include ingestion of hydrocarbons by dugongs that feed on oiled seagrass and indirect impacts to dugongs should seagrass habitats be damaged by a hydrocarbon spill. The dugong calving BIA lies 285 km south-west of the Offshore Facility Operational Area. As noted for the humpback whale resting BIA, the EMBA overlaps a small northern portion of the Exmouth Gulf and it is considered a low likelihood that the dugong BIAs (and associated seagrass meadows) located here and along the Ningaloo Coast (BIAs for calving, nursing, breeding and foraging) would be impacted by a hydrocarbon spill. No surface or shoreline hydrocarbons are predicted within the Exmouth Gulf or associated dugong BIAs within the EMBA. **Summary** A hydrocarbon spill may impact coastal cetaceans through site displacement and damage to food source; however, due to the non-persistent nature of the hydrocarbon it is not predicted to result in impacts on overall population viability of either dugongs or coastal cetaceans.
Marine Turtles Marine turtles are known to utilise nearshore waters and shorelines for foraging and breeding activities (including internesting), with significant nesting beaches along the WA mainland coast and nearshore islands in locations that may be impacted by a loss of well containment spill scenario (including the Ningaloo Coast, Muiron Islands, Montebello and Barrow Islands, and Pilbara Southern Islands Group). The nearshore waters of these marine turtle habitat areas may be exposed to surface, entrained or dissolved hydrocarbons exceeding threshold concentrations. In addition, a number of shorelines and islands along the WA coastline are predicted to be contacted by accumulated hydrocarbons above the ecological impact threshold; including the Exmouth coastline, Karratha coastline, Ningaloo Coast WH, Bedwell Island, Cunningham Island, and the Northern Pilbara Islands and Shoreline (see **Table 6-18** and **Table 6-22** for full list of receptors). The potential impacts of exposure are as previously discussed. In the nearshore environment, turtles can ingest hydrocarbons when feeding and/or can be indirectly affected by loss of a food source (e.g., seagrass due to dieback from hydrocarbon exposure) (Gagnon and Rawson, 2010). In addition, hydrocarbon exposure can impact on turtles during the breeding season at nesting beaches. Contact with gravid adult females or with hatchlings may occur on nesting beaches (accumulated hydrocarbons) or in nearshore waters (entrained hydrocarbons) where hydrocarbons are predicted to make shoreline contact. Males waiting in nearshore areas to mate with adult females may also be impacted by entrained hydrocarbons.

Marine turtles aggregating near nesting beaches within the EMBA during the mating and nesting seasons are most vulnerable to hydrocarbons, due to greater turtle densities and the possible disruption to important life cycle behaviours. Potential impacts may occur at the population level due to the presence of a high number of breeding individuals and hatchlings (during hatchling dispersal) and may impact on overall population viability of marine turtle species. However, given the volatile nature of the hydrocarbons population level impacts are not anticipated to occur.

Sea Snakes

Impacts to sea snakes for the mainland and island nearshore waters from direct contact with hydrocarbons may occur and may include potential damage to the dermis and irritation to mucous membranes of the eyes, nose and throat (ITOPF, 2011a). Due to the time to impact in the nearshore environment, the hydrocarbons are considered to be weathered and less likely to result in toxic effects in comparison to fresh hydrocarbons (i.e., typically in the vicinity of the release location).

Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to sea snakes, with consequence severity dependent on the duration and extent of a spill in relation to the distribution of sea snakes.

Sharks and Rays

Whale sharks and manta rays (reef manta ray and giant manta ray) are known to frequent Ningaloo Reef (forming feeding aggregations March through July) and the nearshore waters of the Muiron Islands (located approximately 280 km south-west of the Offshore Facility Operational Area). Whale sharks and manta rays generally transit along the nearshore coastline in these areas and are vulnerable to surface, entrained and dissolved aromatic hydrocarbon spill impacts, with both taxa having similar modes of feeding.

Whale sharks are versatile feeders, filtering large amounts of water over their gills, catching planktonic and nektonic organisms (Jarman and Wilson, 2004). Whale sharks at Ningaloo Reef have been observed using two different feeding strategies, including passive sub-surface ram-feeding and active surface feeding (Taylor, 2007). Passive feeding consists of swimming slowly at the surface with the mouth wide open. During active feeding, sharks swim high in the water with the upper part of the body above the surface with the mouth partially open (Taylor, 2007). These feeding methods would result in the potential for individuals that are present in worse affected spill areas to ingest potentially toxic amounts of entrained or dissolved aromatic hydrocarbons into their body. Large amounts of ingested hydrocarbons may affect their endocrine and immune system in the longer term.

The presence of hydrocarbons may also cause displacement of whale sharks from important feeding and resting areas at Ningaloo Reef, potentially disrupt migration and aggregations to these areas in subsequent seasons. Whale sharks may also be affected indirectly by entrained or dissolved aromatic hydrocarbons through the contamination of their prey. The preferred food of whale sharks are planktonic organisms which are abundant in the coastal waters of Ningaloo Reef in late summer/autumn, driving the annual arrival and aggregation of whale sharks in this area. If a worse-case spill event were to occur during the spawning season, this important food supply (in worse spill affected areas of the reef) may be diminished or contaminated. The contamination of their food supply and the subsequent ingestion of this prey by the whale shark may also result in long term impacts as a result of bioaccumulation.

There is the potential for other coastal shark species (e.g., dwarf, narrow and/or green sawfish) to be impacted directly from hydrocarbon contact and/or indirectly through contaminated prey or loss of habitat. Excluding sawfish, which may exhibit high site fidelity, it is most likely that shark species (as mobile animals) will move away from spill affected areas and suffer minimal direct impact.

A spill reaching the Ningaloo coastline during key aggregation periods and impacting important whale shark foraging areas may have severe impacts to the local whale shark population, including possible mortality of individuals and impacts to life cycle habitats such as migration patterns. Most species of shark and ray (including whale sharks) are, however, expected to move away from spill affected areas with minimal impacts.

Seabirds

In the event of a loss of well containment, there is the potential for seabirds, and resident/non-breeding overwintering shorebirds that use the nearshore waters within the EMBA for foraging and resting, to be exposed to hydrocarbons above ecological impact thresholds. Impacts may include both lethal or sub-lethal effects, as discussed above and in more detail below.

Although breeding oceanic seabird species can travel long distances to forage in offshore waters, most breeding seabirds tend to forage in nearshore waters near to their breeding colony, resulting in intensive feeding by higher seabird densities in these areas during the breeding season and making these areas particularly sensitive in the event of a spill.

Migratory shorebirds may be exposed to stranded hydrocarbon when foraging or resting in intertidal habitats, however, direct oiling is typically restricted to relatively small portion of birds, and such oiling is typically restricted to the birds' feet. Unlike seabirds, shorebird mortality due to hypothermia from matted feathers is relatively uncommon (Henkel *et al*., 2012). Indirect impacts, such as reduced prey availability, may occur (Henkel *et al*., 2012).

Notably, no surface hydrocarbon contact with receptors was predicted by spill modelling. As mentioned, predicted surface hydrocarbons are also relatively restricted to the release location and some sporadic surface contact (<10 g/m^2) Ningaloo Coast WH and Ningaloo MP (state) and near to the Muiron Islands. This latter contact may impact birds nesting at the Muiron Islands, where there is also predicated shoreline contact. Shoreline hydrocarbon contact above ecological thresholds may also occur along the coastlines as Exmouth, Derby, Karratha and Northern Pilbara, as well as at Bedwell Island and Imperieuse Reef (part of the Rowley Shoals). All of these islands are known to support seabird colonies (see **Table** 6-18). Impacts may, therefore, occur at the population level for species breeding at these locations should a spill occur during the relevant species breeding seasons.

Impacts are likely to occur through the ingestion of contaminated fish (nearshore waters) or invertebrates (intertidal foraging grounds such as beaches, mudflats and reefs) which have been exposed to surface, shoreline, entrained or dissolved hydrocarbons within the EMBA. Ingestion of contaminated prey can also lead to internal injury to sensitive membranes and organs (International Petroleum Industry Environmental Conservation Association, 2004). Whether the toxicity of ingested hydrocarbons is lethal or sub-lethal will depend on the weathering stage and its inherent toxicity. Exposure to hydrocarbons may have longer term effects, with impacts to population numbers due to decline in reproductive performance and malformed eggs and chicks, affecting survivorship and loss of adult birds. Seabirds also typically nest above the high water mark, meaning nesting areas would not be expected to be directly impacted.

Notably, the nearest receptor to the release location that is predicted to receive shoreline hydrocarbons above threshold concentrations was Bedwell Island in the Rowley Shoals. Shoreline hydrocarbons were modelled to take a minimum of 787 hours to arrive at this location. Hydrocarbons will be significantly weathered after this period and toxic impacts unlikely to occur. Birds utilising the nearshore waters and intertidal areas for foraging and resting at locations of shoreline contact may, therefore, suffer sub-lethal and, less likely, lethal impacts.

Submerged Shoals and Banks

Protected Species

Marine Turtles

While there are no shoal, bank or reef features within the Offshore Facility Operational Area, there is the potential for marine turtles to be present at submerged shoals and banks within the EMBA, including Rankin Bank and Glomar Shoals which are located 54 and 40 km from the Offshore Facility Operational Area, respectively (described in **Appendix C-1**, Section 4.4). These shoals and banks may, at times, be foraging habitat for marine turtles, given the coral and filter feeding biota associated with these areas.

Notably, there are no known key aggregation areas (i.e., BIAs or habitat critical areas) for marine turtles associated with Glomar Shoals or Rankin Bank.

Impacts to marine turtles at submerged shoals and banks are as previously discussed above. Marine turtles would be expected to be foraging, resting and breathing at the surface at these geomorphic features. Ingestion of hydrocarbons while foraging through prey is also possible.

Summarily, marine turtles may be present at shoals and banks within the EMBA and, therefore, may be impacted by entrained and/or dissolved hydrocarbons present at concentrations greater than the relevant thresholds. Impacts would be expected to be limited to the individuals that may be transiting these areas. Subsequently, impacts at the population level are not anticipated for any of the five marine turtle species that may frequent shoals and banks within the EMBA.

Sea Snakes

It is likely that sea snakes will be present at submerged shoals and banks within the EMBA, such as Rankin Bank and Glomar Shoal. While there are no known areas of aggregation for sea snakes within the EMBA, individual sea snakes may be impacted by shoreline and surface hydrocarbons predicted at and near to the Muiron, Barrow and Montebello Islands due to their habitat preferences.

The potential impacts of exposure to hydrocarbons are as discussed above.

Sea snake species in Australia generally show strong habitat preferences (Heatwole and Cogger, 1993); species that have preferred habitats associated with submerged shoals and oceanic atolls may be disproportionately affected by a hydrocarbon spill affecting such habitat. However, population level impacts are not anticipated.

Sharks and Rays

Pelagic sharks and rays may frequent submerged shoals and banks (such as Rankin Bank and Glomar Shoal) within the EMBA to feed. Some species may also exhibit site fidelity to these geomorphic features. There is the potential for resident shark and ray populations to be impacted directly from hydrocarbon contact or indirectly through contaminated prey or loss of habitat.

Spill modelling results indicated that Rankin Bank (located 54 km south-west from the Offshore Facility Operational Area) may be contacted by dissolved hydrocarbons above ecological thresholds. No contact for entrained, surface or

shoreline hydrocarbons was predicted for these submerged features. The Glomar Shoals is located 40 km east of the Offshore Facility Operational Area. Notably, not contact for dissolved, entrained, surface or shoreline hydrocarbons was predicted for this location. Species which are resident to or exhibit site-fidelity to Glomar Shoals may experience sub-lethal impacts and/or become displaced. Indirect impacts through ingestion of prey that has been exposed to hydrocarbons and/or the loss of marine flora habitats may also impact sharks and rays.

Pelagic sharks and rays are expected to move away from areas affected by spilled hydrocarbons. Impacts to such species are expected to be limited to behavioural responses/displacement. Shark and ray species that have associations with submerged shoals and banks may or may not be displaced/exhibit behavioural avoidance in response to such habitat being contacted by spilled hydrocarbons. Such species may be more susceptible to a reduction in habitat quality resulting from a hydrocarbon spill. It is expected that there will be no impacts at the population level.

All Settings

Coral Reefs

Receptors

There are no coral reef habitats located within the Offshore Facility Operational Area. Within the EMBA, coral reef habitats exist at Rankin Bank, Glomar Shoal, Muiron Islands, the Montebello Islands, Barrow Island and numerous receptors associated with Ningaloo Reef, including the reef itself.

As discussed in 'Benthic Fauna', dissolved hydrocarbons are anticipated to contact Rankin Bank. Impacts to coral reef habitat at these features are anticipated to be similar in nature to benthic communities and of similarly low probability due to the water depths they exist at. However, potential biological impacts to sensitive corals could include sub-lethal stress and in some instances total or partial mortality of corals.

Dissolved hydrocarbons were modelled to reach Montebello Island MP and Montebello MP, Barrow Island MP (state), Barrow Island Marine Management Area, and Barrow and Boodie Islands.

Spill modelling indicated that hydrocarbons would also reach the North Kimberley MP (accumulated), the Ningaloo Reef Commonwealth and State Ningaloo MPs, as well as the Ningaloo Coast World Heritage Area (dissolved and accumulated).

Impacts

Exposure to entrained hydrocarbons (≥100 ppb)/dissolved aromatic hydrocarbons (≥50 ppb) has the potential to result in lethal or sub-lethal toxic effects to corals and other sensitive sessile benthos within the upper water column, including upper reef slopes (subtidal corals), reef flat (intertidal corals) and lagoonal (back reef) coral communities (with reference to Ningaloo Coast). Mortality in a number of coral species is possible and this would result in the reduction of coral cover and change in the composition of coral communities. Sub-lethal effects to corals may include polyp retraction, changes in feeding, bleaching (loss of zooxanthellae), increased mucous production resulting in reduced growth rates and impaired reproduction (Negri and Heyward, 2000).

This could result in impacts to the shallow water fringing coral communities/reefs of the nearshore islands (e.g., Muiron Islands, Barrow and Montebello Island groups). With reference to Ningaloo Reef, wave-induced water circulation flushes the lagoon and may promote removal of entrained and dissolved hydrocarbons from this particular reef habitat. Under typical conditions, breaking waves on the reef crest induce a rise in water level in the lagoon creating a pressure gradient that drives water in a strong outward flow through channels.

Shoreline Accumulation

As mentioned, shoreline accumulation was modelled to occur at a number of receptors, including at the Exmouth and Karratha coastline, North Kimberley MP, Northern Pilbara Islands and shoreline, Imperious Reef and Bedwell Island (Rowley Shoals), Cunningham Island, Ningaloo coast MP (state) and Ningaloo Coast World Heritage area.

Shallow coral habitats (i.e., nearshore and intertidal waters) are most vulnerable to hydrocarbons through coating by direct contact with surface slicks during periods when corals are tidally-exposed at spring low tides. Water soluble hydrocarbon fractions associated with surface slicks are known to cause high coral mortality (Shigenaka, 2001) via direct physical contact of hydrocarbon droplets to sensitive coral species (such as the branching coral species).

There is, therefore, potential for lethal impacts due to the physical hydrocarbon coating of sessile benthos (including by entrained hydrocarbons), with likely significant mortality of corals (adults, juveniles and established recruits) at the small spill affected areas. These impacts are particularly applicable to branching corals which are reported to be more sensitive than massive corals (Shigenaka, 2001).

Recruitment/Spawning

In the unlikely event of a spill occurring at the time of coral spawning at potentially affected coral locations or in the general peak period of biological productivity, there is the potential for a significant reduction in successful fertilisation and coral larval survival due to the sensitivity of coral early life stages to hydrocarbons (Negri and Heyward, 2000). Such impacts are likely to result in the failure of recruitment and settlement of new population cohorts. In addition,

some non-coral species may be affected via direct contact with entrained and dissolved aromatic hydrocarbons, resulting in sub-lethal impacts and in some cases mortality. This is with particular reference to the early life-stages of coral reef animals (reef attached fishes and reef invertebrates), which can be relatively sensitive to hydrocarbon exposure. Coral reef fish are site attached, have small home ranges and as reef residents they are at higher risk from hydrocarbon exposure than non-resident, more wide-ranging fish species. The exact impact on resident coral communities (which may include fringing reefs of the offshore islands and/or the Ningaloo reef system) will be entirely dependent on actual hydrocarbon concentration, duration of exposure and water depth of the affected communities. Coral live cover, structure and composition may reduce in hydrocarbon impacted areas, manifested by loss of corals and associated sessile biota.

Recovery of impacted reef areas from a range of stressors typically relies on coral larvae from neighbouring coral communities that have either not been affected or only partially impacted. For example, there is evidence that Ningaloo Reef corals and fish are partly self-seeding (Underwood, 2009) with the supply of larvae from locations within Ningaloo Reef of critical importance to the healthy maintenance of the coral communities. Recovery at other coral reef areas, may not be aided by a large supply of larvae from other reefs, with levels of recruits after a disturbance event only returning to previous levels after the numbers of reproductive corals had also recovered (Gilmour *et al*., 2013).

A hydrocarbon spill may subsequently result in large-scale impacts to coral reefs within the EMBA, particularly at Rankin Bank and Montebello MP, with long-term effects (recovery >10 years) likely.

Productivity

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

Plankton exposure to hydrocarbons in the water column can result in changes in species composition with declines or increases in one or more species or taxonomic groups (Batten *et al*., 1998). Phytoplankton may also experience decreased rates of photosynthesis (Tomajka,1985). For zooplankton, direct effects of contamination may include toxicity, suffocation, changes in behaviour, or environmental changes that make them more susceptible to predation.

Impacts on plankton communities are likely to occur in areas where entrained or dissolved aromatic hydrocarbon threshold concentrations are exceeded, but communities are expected to recover relatively quickly (within weeks or months). This is due to high population turnover with copious production within short generation times that also buffers the potential for long-term (i.e., years) population declines (International Tanker Owners Pollution Federation, 2011a). Therefore, any impacts to exposed planktonic communities present within the EMBA are anticipated to be short-term.

Filter Feeders

Hydrocarbon exposure to filter feeding communities (e.g., Montebello Islands) may occur, depending on the depth of the entrained and dissolved aromatic hydrocarbons. See discussion above on potential impacts.

Nearshore filter feeders that are present in shallower water <20 m may potentially be impacted by entrained hydrocarbon through lethal/sublethal effects (see discussion for Offshore Filter Feeders). However, due to the time to impact in the nearshore environment, the hydrocarbons are considered to be weathered and less likely to result in toxic effects in comparison to fresh hydrocarbons (i.e., typically in the vicinity of the release location). Such impacts may result in localised, long-term effects to community structure and habitat.

Seagrass Beds, Macroalgae and Mangroves

Depending on the trajectory of the entrained and dissolved hydrocarbon plume, macroalgal / seagrass communities including those along the Ningaloo Coast (patchy and low cover associated with the shallow limestone lagoonal platforms), Muiron Islands (associated with limestone pavements), the Barrow and Montebello Island groups, the Pilbara Southern Island Group (documented as low and patchy cover) have the potential to be exposed.

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

Seagrass and macroalgal beds occurring in the intertidal and subtidal zone may be susceptible to impacts from entrained hydrocarbons. Toxicity effects can also occur due to absorption of soluble fractions of hydrocarbons into tissues (Runcie *et al*., 2010). The potential for toxicity effects of entrained hydrocarbons may be reduced by weathering processes that should serve to lower the content of soluble aromatic components before contact occurs.

Minimum time to contact for shoreline contact of hydrocarbons with the nearest receptor that may host seagrasses is 845 hours (Karratha coastline). As such, hydrocarbons released in the event of a loss of well containment are expected to be weathered prior to any credible contact with seagrasses. Exposure to entrained hydrocarbons may

result in mortality, depending on actual entrained hydrocarbon concentration received and duration of exposure. Physical contact with entrained hydrocarbon droplets could cause sub-lethal stress, causing reduced growth rates and a reduction in tolerance to other stress factors (Zieman *et al*., 1984). Impacts on seagrass and macroalgal communities are likely to occur in areas where hydrocarbon threshold concentrations are exceeded.

As mentioned, mangrove habitat and associated mud flats and salt marsh at Ningaloo Coast (shoreline) and the Montebello MP (dissolved) have the potential to be exposed to shoreline hydrocarbon contact. Hydrocarbon coating of the prop roots of mangroves can occur when entrained hydrocarbons are deposited on the aerial roots. Hydrocarbons deposited on the aerial roots can block the pores used to breathe or interfere with the trees' salt balance, resulting in sub-lethal and potential lethal effects. Mangroves can also be impacted by entrained/dissolved hydrocarbons that may adhere to the sediment particles. In low energy environments, such as in mangroves, deposited sediment-bound hydrocarbons are unlikely to be removed naturally by wave action and may be deposited in layers by successive tides (National Oceanic and Atmospheric Administration, 2014). Given the non-persistent nature of the hydrocarbons, however, no significant effects to mangrove habitat are expected to occur.

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

Summary of Potential Impacts to Socio-economic Values	
Setting	***Receptor Group***
All Settings	**Cultural Values and Heritage** Through consultation and review of available literature (**Section 4.9**), Woodside understands that sea country, including marine ecosystems and species, archaeological heritage and heritage sites, marine parks, as well as intangible cultural heritage may be impacted in the event of a hydrocarbon release from a vessel collision. Cultural features and heritage values that have the potential to be impacted include: Marine ecosystems and species: Marine ecosystems may hold both cultural and environmental value to Traditional Custodians (see **Section 4.9**), with cultural and environmental values intrinsically linked (DCCEEW 2023, MAC 2021 as cited in Woodside 2023b). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country – the seascape which Traditional Custodians view, interact with or hold knowledge of. The EMBA is known to include habitat for culturally important species such as whales, whale sharks, turtles, dugongs, plankton, and seagrass (**Sections 0** and **4.9**). In the event of a worst-case release of hydrocarbons, individual fauna may be directly impacted or impacted through temporary degradation of their habitats, however, no population level impacts as expected. Impacts are not expected to occur to ecologically significant proportions of the populations of the species, nor expected to result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained. <u>Heritage Sites</u> The EMBA overlaps Historic Underwater Heritage sites and the Dampier Archipelago National Heritage Place and the Ningaloo Coast World Heritage, National and Commonwealth Heritage Places. The EMBA overlaps 728 Registered Aboriginal Sites (**Section 4.9**). Any oil that reaches the shoreline has potential to impact on indigenous heritage places along the coastline. In the unlikely event of a hydrocarbon release, shoreline accumulation may affect sensitive artefacts or areas, which could damage their heritage value. <u>Marine Parks</u> The EMBA overlaps seven AMPs under North-West Marine Parks Network Management Plan 2018 and nine State Marine Parks. Management Plans for these parks recognise cultural values of Indigenous groups (**Section 4.8**). Due to the low maximum concentrations predicted to reach any marine park, it is not anticipated that their values will be compromised. Intangible cultural heritage: Impacts may occur to intangible cultural values such as songlines; creation/dreaming sites, sacred sites, ancestral beings; cultural obligations to care for Country; <u>knowledge of Country/customary law and transfer of knowledge; connection to Country; Access</u>

	to Country; kinship systems and totemic species, resource collection. Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn, 2021). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes results in reduced sightings (e.g., through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO, 2003). In the unlikely event of a hydrocarbon release, intangible cultural heritage values may be impacted.
Offshore Waters	**Fisheries – Commercial** **Section 4.10** contains a list of the fisheries occurring within the EMBA, and those considered to have potential for impact with the Petroleum Activities Program. A worst-case hydrocarbon spill, as modelled for this EP, is not considered likely to cause significant direct impacts on the target species of these commercial fisheries, as discussed below. Refer to above sections for a discussion of impacts to spawning. Fish exposure to hydrocarbon can result in 'tainting' of their tissues. Even very low levels of hydrocarbons can impart a taint or 'off' flavour or smell in seafood. Tainting is reversible through the process of depuration which removes hydrocarbons from tissues by metabolic processes, although it is dependent upon the magnitude of the hydrocarbon contamination. Fish have a high capacity to metabolise these hydrocarbons while crustaceans (such as prawns) have a comparably reduced ability (Yender *et al*., 2002). Seafood safety is a major concern associated with spill incidents. Therefore, actual or potential contamination of seafood can affect commercial and recreational fishers and can impact seafood markets long after any actual risk to seafood from a spill has subsided (Yender *et al*., 2002). A major hydrocarbon spill would result in the establishment of an exclusion zone around the spill affected area. There would also be a temporary prohibition on fishing activities for a period of time. Subsequently, there is potential for economic impacts to the affected commercial fishing operators. Additionally, hydrocarbon can foul fishing equipment such as traps and trawl nets, requiring cleaning or replacement. Impact to fishers would subsequently be dependent on the extent of the spill and resulting exclusion zone and may cause economic impacts due to fishing bans, damaged equipment and/or consumer perception of seafood safety. These impacts would not be expected to be long term or affect the viability of the fishery.
	Tourism and Recreation Recreational fishers predominantly target tropical species, such as emperor, snapper, grouper, mackerel, trevally and other game fish. Recreational angling activities include shore-based fishing, private boat and charter boat fishing, with the peak in activity between April and October (Smallwood *et al*., 2011). Limited recreational fishing takes place in the offshore waters of the PAA due to the distance from land mass, however; fishing may take place at nearby Rankin Bank and also at Glomar Shoal. Recreational diving within the offshore waters of the EMBA may be impacted through spill exclusion zones should a spill occur and also as a result of perceived health impacts by the community. It is considered that recreational diving is more likely to occur within nearshore waters and in water depths less than 40 m deep, however. Impacts on species that are recreationally fished are described above under 'Commercial Fisheries' and 'Pelagic and Demersal Fish'. A worst-case spill may lead to the exclusion of marine nature-based tourist activities, resulting in a loss of revenue for tour operators. These impacts would not be expected to be long term.
	Offshore Oil and Gas Infrastructure Surface hydrocarbons from a worst-case spill may affect production from existing offshore petroleum facilities (e.g., platforms and FPSOs). For example, facility water intakes for cooling and fire hydrants could be shut off which could in turn lead to the temporary cessation of production activities. Spill exclusion zones established to manage the spill could also prohibit activity support vessel access as well as tankers approaching facilities on the NWS. The impact on ongoing operations of regional production facilities would be determined by the nature and scale of the spill and the metocean conditions at the time. Furthermore, decisions on

	the operation of production facilities in the event of a spill would be based primarily on health and safety considerations. The closest oil and gas operation is the Angel platform (operated by Woodside). Other nearby facilities include the Woodside-operated Okha FPSO, GWA and the Santos operated Reindeer platform (**Section 4.10.5**). Operation of these facilities is likely to be affected in the event of a worst-case loss of well containment.
Nearshore Island and Mainland Coastal Areas (Nearshore Waters)	**Fisheries – Commercial** The Montebello Islands are predicted to be contacted by dissolved hydrocarbons. Nearshore fisheries in this area that are predicted to be impacted by dissolved hydrocarbons include pearling leases (state fisheries) located at the Montebello Islands. There are a number of contact locations within the island group at both ecological and socio-cultural shoreline hydrocarbon thresholds. Impacts to these fisheries would include possible direct mortality or sub-lethal impacts to the target species, as well as indirect financial and reputational impacts from possible fishing exclusion zones and perceived health impacts by the community/consumers as a result of the spill event. Impacts to fish stocks would depend on the time of the year the spill event was to occur, and the maturity of the fishery. Impacts are, however, expected to be restricted to mid-term for both direct and indirect impacts.
	Fisheries – Traditional Although no designated traditional fisheries have been identified within the PAA or EMBA, it is recognised that Indigenous communities fish in the shallow coastal and nearshore waters of Ningaloo Reef and therefore may be impacted if a worst-case hydrocarbon spill were to occur. Impacts would be similar to those identified for commercial fishing, in the form of a potential fishing exclusion zone and possible contamination/tainting of fish stocks.
	Tourism and Recreation In the unlikely event of a major spill, the nearshore waters of the Ningaloo Coast (including the Ningaloo Coast State and Commonwealth Marine Park and World Heritage Area) could be contacted by dissolved hydrocarbons at ecological thresholds, as well as accumulated (Ningaloo Coast WHA and State Marine Park) hydrocarbons, depending on the prevailing wind and current conditions. The Ningaloo coastal waters offer a number of amenities, such as fishing, swimming, snorkelling, diving and other water-based activities, and utilisation of beaches and surrounds have a recreational value for local residents and visitors (regional, national and international). If a major spill resulted in hydrocarbon contact within this area, there could be restricted access to beaches for a period of days to weeks, until natural weathering or tides and currents remove the hydrocarbons. In the event of a major spill, tourists and recreational users may also avoid areas due to perceived impacts, including after the hydrocarbon spill has dispersed. There is also the potential for stakeholder perception that this remote environment will be contaminated over a larger area and for the longer term resulting in a prolonged period of tourism decline. Oxford Economics (2010) assessed the duration of hydrocarbon spill related tourism impacts and found that on average, it took 12 to 28 months to return to baseline visitor spending. There is likely to be significant impacts to the tourism industry, wider service industry (hotels, restaurants and their supply chain) and local communities in terms of economic loss as a result of spill impacts to tourism. Recovery and return of tourism to pre-spill levels will depend on the size of the spill, effectiveness of the spill clean-up and change in any public misconceptions regarding the spill (Oxford Economics, 2010). Other areas modelled to receive dissolved or accumulated hydrocarbons greater than the socio-cultural threshold (≥10 g/m^2 and 1 g/m^2, respectively) which are used for tourism and recreation activities include the Montebello MP, Exmouth coastline, Karratha coastline, Northern Pilbara Islands and Shoreline, Rowley Shoals Islands and MP, North Kimberley MP, Barrow and Boodie Islands, Montebello Island MP. Impacts to these receptors would be as discussed above, although less significant due to the lower levels of tourism and recreation activities undertaken at these locations compared with the Ningaloo Coast.

MEE-01 Well Loss of Containment – Risk Analysis
A bowtie risk analysis was undertaken to assess MEE-01; refer to **Figure 6-9, Figure 6-10,** and **Figure 6-13** for bowtie diagrams which were an output of Woodside's risk analysis process.

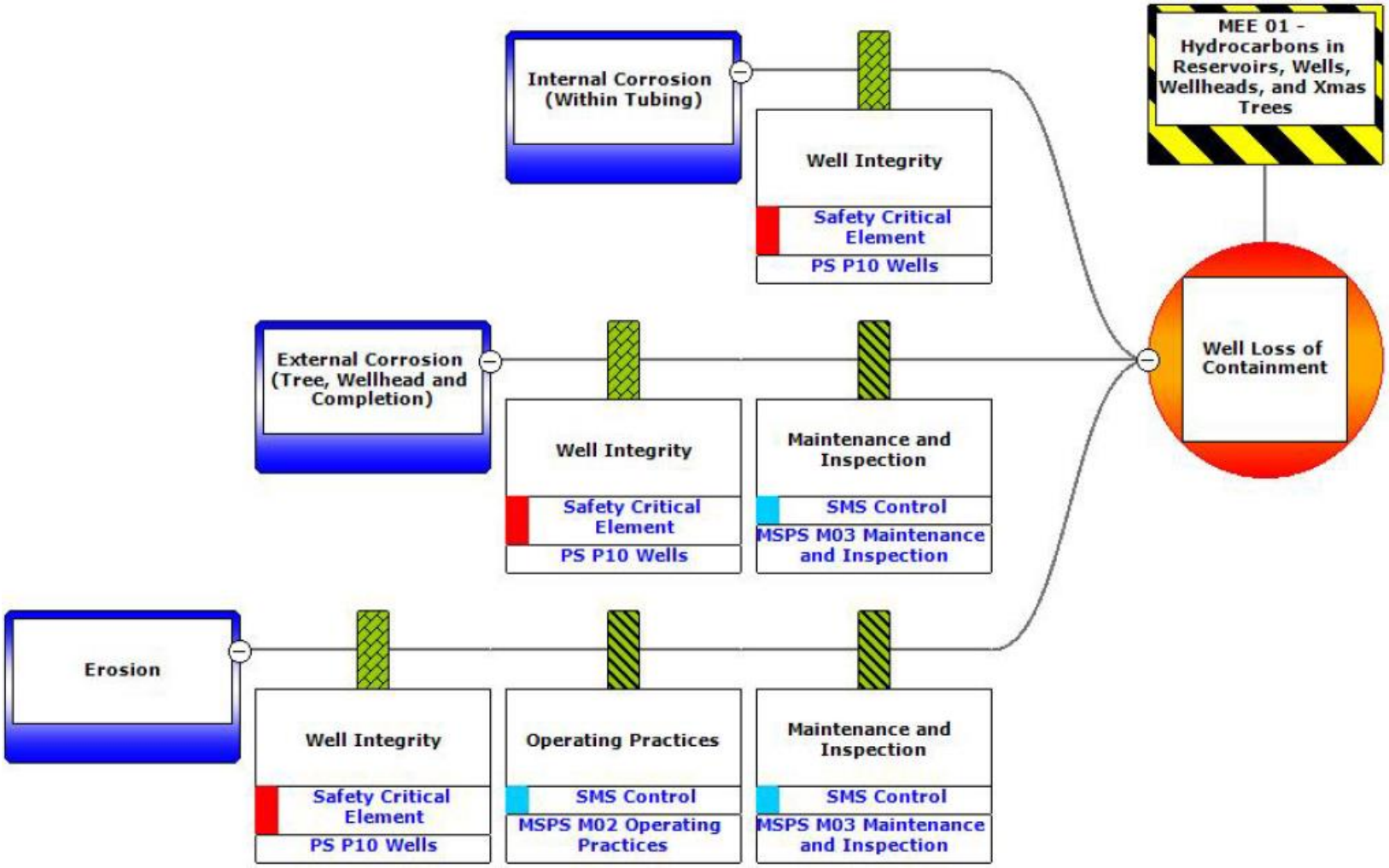


Figure 6-9: MEE-01 Well loss of containment (Causes 1 to 3)

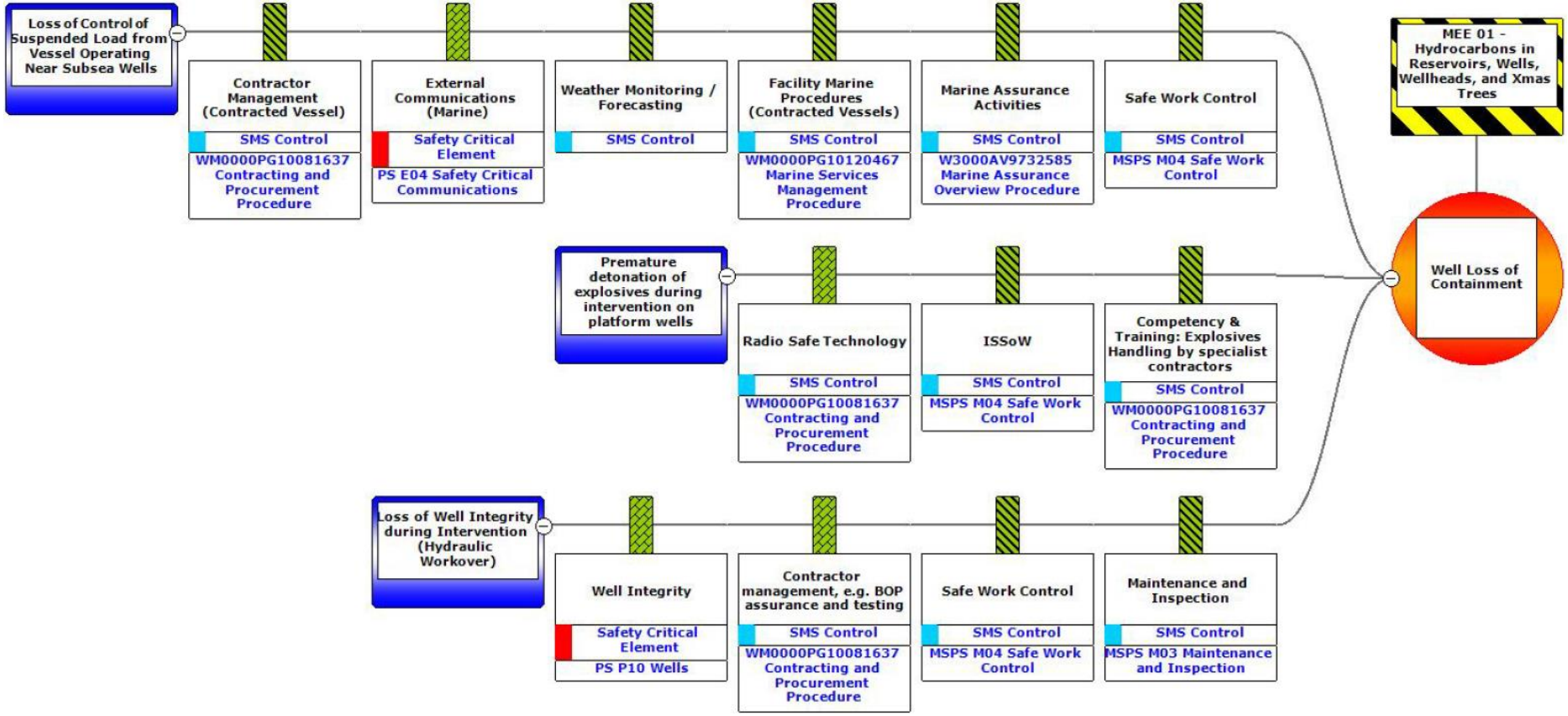


Figure 6-10: MEE-01 Well loss of containment (Causes 4 to 6)

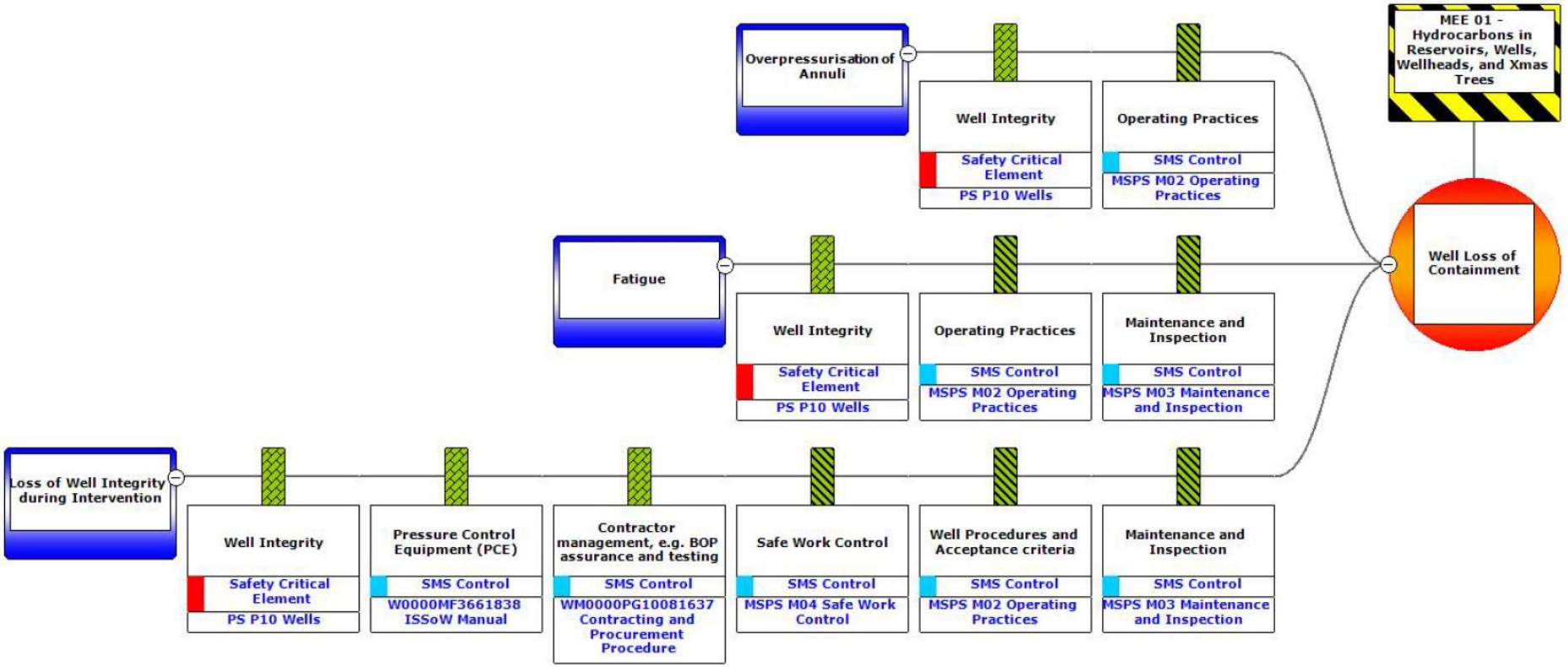


Figure 6-11 MEE-01 Well loss of containment (Causes 7 - 9)

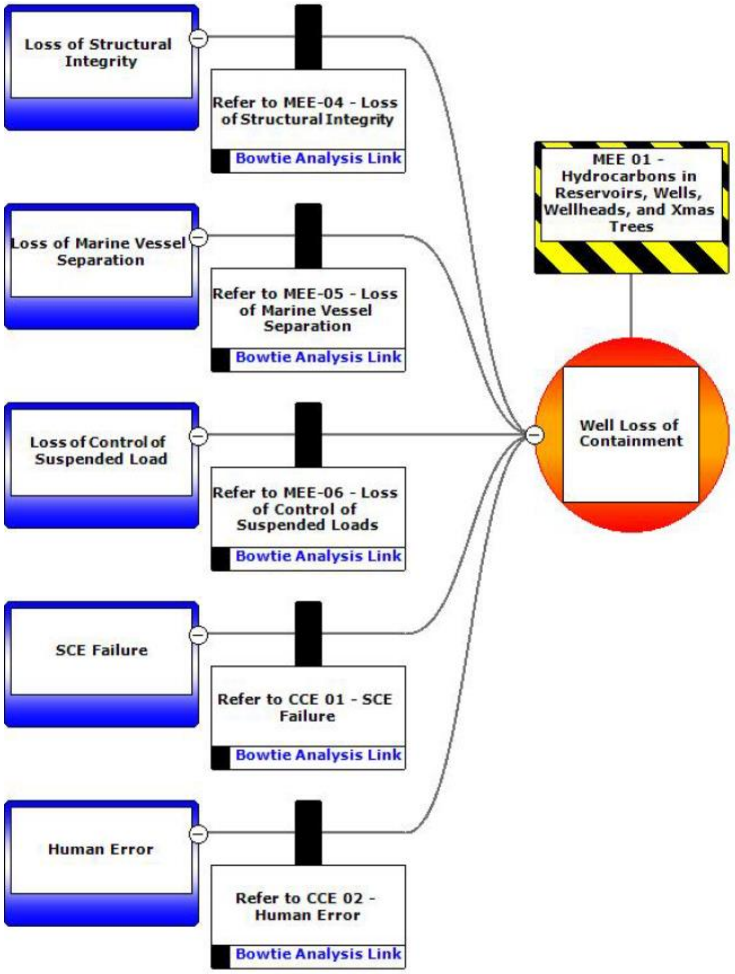


Figure 6-12 MEE-01 Well loss of containment (Causes 10 - 14)

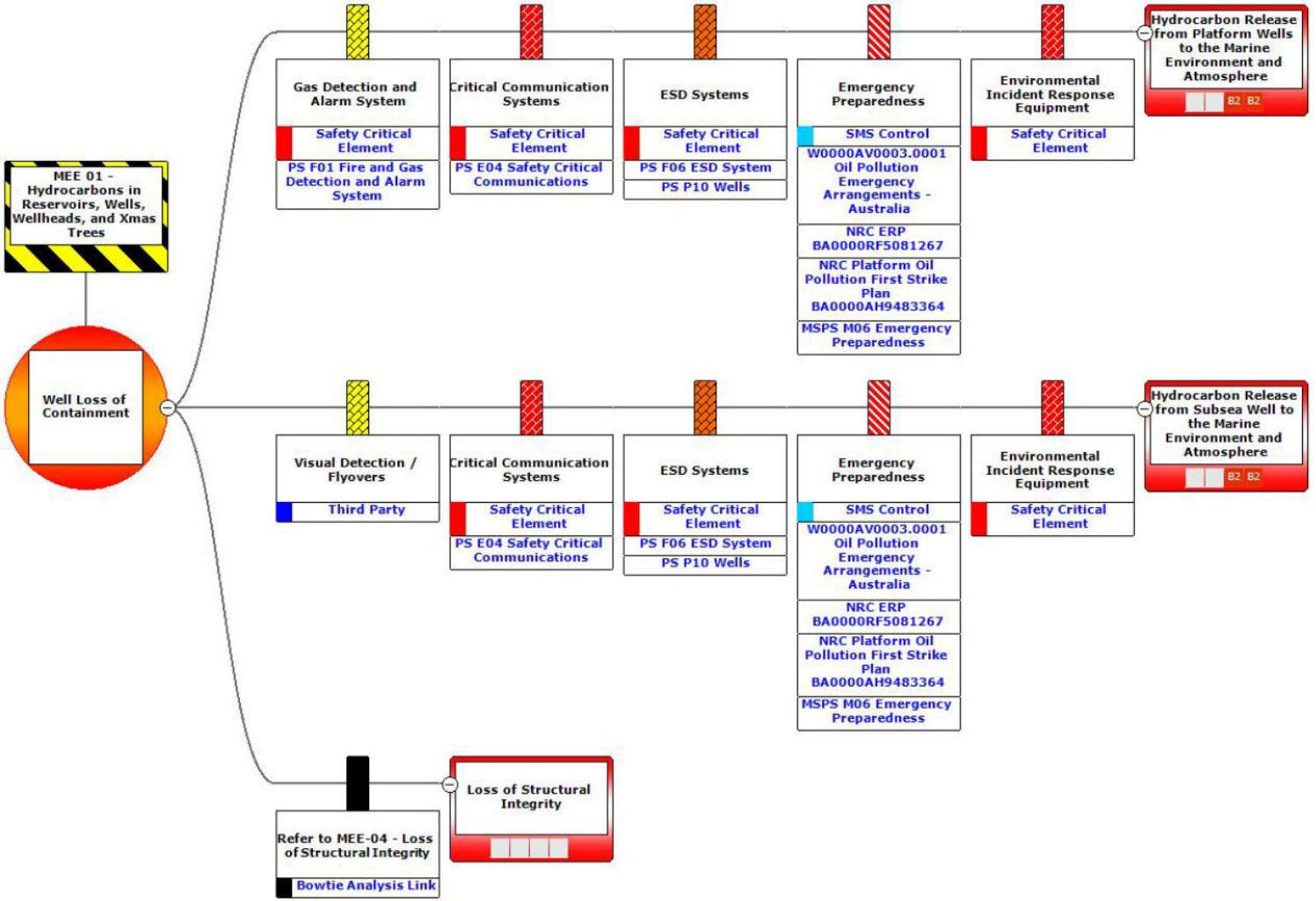


Figure 6-13: MEE-01 wells loss of containment (Outcomes)

MEE-01 Loss of Well Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design		
Substitution				
Engineering Controls	Maintaining well and mechanical integrity to contain reservoir fluids within the well envelope to avoid an MEE.	P10 – Wells P09 – Pipeline Systems	Prevention (Technical)	Yes **C 11.1**
Mitigating Barrier – Safety and Environmental Critical Elements				
Engineering Controls	Maintaining availability of critical external and internal communication systems to facilitate prevention and response to accidents and emergencies.	E04 – Safety Critical Communication Systems	Mitigation (Technical)	Yes **C 11.2**
Engineering Controls	Maintain Fire and Gas Detection and Alarm Systems on NRC to prevent and response to fire or gas hazards	F01 – Fire and Gas Detection and Alarm Systems	Detection (Technical)	Yes **C 11.3**
Engineering Controls	Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition so as to prevent or mitigate the effects of a MEE	F06 – Safety Instrumented System P10 – Wells	Reduction/ Control (Technical)	Yes **C 11.4**
Emergency Response	Maintaining environmental incident response equipment to implement initial response to enact the NRC Operations Oil Pollution First Strike Plan.	E05 – Environmental Incident Response Equipment	Mitigation (Technical)	Yes **C 11.5**
Legislation Codes and Standards				
Procedures and Administration	OPGGS (Resource Management and Administration) Regulations 2011: Accepted Well Operations Management Plan (WOMP) to	North Rankin Hub Well Operations Management Plan.	Prevention/ Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.6**

MEE-01 Loss of Well Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
	demonstrate that the risks to well integrity are managed in accordance with sound engineering principles, standards, specifications, and good oilfield practice. It describes the systems in place to ensure well design and integrity is managed for the well lifecycle, thus contributing to management of associated potential environmental consequences of well integrity events.			
	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the NRC to; • identify hazards that have the potential to cause a MAE; • detail assessment of MAE risks; and • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with a MAE to ALARP; thus, contributing to management of associated potential environmental consequences of MAEs.	NRC Operations Safety Case	Prevention / Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.7**
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implementing management systems to maintain: • M02 – Operating practices • M03 – Maintenance and inspections • M04 – Safe work control	MSPS M02 – Operating practices MSPS M03 – Maintenance and inspections MSPS M04 – Safe work control Marine Services Management Procedure	Prevention (Administration)	Yes – see **Section 7.12**

MEE-01 Loss of Well Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
	• Marine Services Management Procedure • Marine Assurance Overview Procedure • Contracting and Procurement Procedure. • ISSoW Manual	Marine Assurance Overview Procedure Contracting and Procurement Procedure		
	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 11.8**
Emergency Response and Contingency Planning	Implementing management systems to maintain: • M06 – Emergency Preparedness • NRC Emergency Response Plan • Well Intervention Programme ESD Procedure • NRC Operations Oil Pollution First Strike Plan • Oil Pollution Emergency Arrangements – Australia.	MSPS M06 – Emergency preparedness NRC Emergency Response Plan NRC ERP Well Intervention Programme ESD Procedure NRC Operations Oil Pollution First Strike Plan Oil Pollution Emergency Arrangements – Australia	Mitigation (Administration)	Yes See **Section 7.12** Refer to Appendix D for discussion around the ALARP assessment of controls related to hydrocarbon spill response.

Risk Based Analysis

For risks identified as MEEs, a detailed risk-based bowtie analysis (as outlined in **Section 2.7.3**) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event.

Application of Woodside's Risk Management Procedures and implementation of the WOMP ensures the continuous identification of hazards, systematic assessment of risks, and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability
- well integrity codes and standards.

For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g., inspection, maintenance, testing and monitoring requirements) to ensure technical integrity.

Bowtie analysis was undertaken to assess MEE-01; refer to **Figure 6-9** - **Figure 6-13** for bowtie diagrams.

A quantitative spill risk assessment was undertaken (refer **Section 6.7.2** for details of the method used).

Company Values

Corporate values require all personnel at Woodside to comply with appropriate policies, standards, procedures and processes while being accountable for their actions and holding others to account in line with Our Values. As detailed above, the Petroleum Activities Program is undertaken in line with these policies, standards and procedures that include suitable controls to prevent loss of well containment, and response should a loss of well containment occur.

Societal Values

Due to the Petroleum Activities Program's proximity to sensitive receptors (e.g., Glomar Shoal, Ningaloo Coast) and the potential extent of the wider EMBA, the loss of well containment risk rating presents a Decision Type B in accordance with the decision support framework described in **Section 2.6.1**. Extensive consultation was undertaken for this program to identify the views and concerns of relevant persons, as described in **Section 5**.

Woodside has sent an Activity Factsheet to all identified relevant persons regarding the Petroleum Activities Program (**Section 5**). Woodside has consulted with AMSA and the WA Department of Transport (DoT) on spill response strategies. In accordance with the MoU between Woodside and AMSA, a copy of the Oil Pollution First Strike Plan was provided to AMSA.

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 prevention of the MEE through design of well integrity, 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 of MEEs are specified and assured through implementing the WOMP, SCE management procedures including performance standards for SCEs, and Management System Performance Standards (MSPSs) for Safety Critical Management System Controls.

The application of Woodside Risk Management Procedures and implementation of the WOMP ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the technical performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability
- well integrity codes and standards.

Well intervention activities are carried out to address maintenance issues with the wells but offer the potential for Loss of Containment from the wells. These activities are carried out using equipment specific to the task by specialist personnel under the Safe Work Control MSPS.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of well intervention activities, it is considered that MEE risk associated with Wells Loss of Containment at NRC and at subsea wells are managed to ALARP.

Demonstration of Acceptability

Acceptability Statement:

Loss of well containment has been evaluated as having a 'high' (B2) current risk rating. As per **Section 2.6.3**, Woodside considers 'high' (B2) risk ratings as acceptable if ALARP is demonstrated using good industry practice, company and societal values and risk based analysis are considered, 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 below.

Principles of Ecologically Sustainable Development

Woodside is a proud Australian company that is here for the long term. Woodside has a strong history of exploration and development of oil and gas reserves in the north west of Western Australia with an excellent environmental record, while providing revenue to State and Commonwealth Governments, returns to shareholders, jobs and support to local communities. Titles for oil and gas exploration are released based on commitments to explore with the aim of uncovering and developing resources. It is under the lease agreement that Woodside has determined the potential to develop the hydrocarbon fields for which acceptance of this EP is sought under the Environment Regulations.

Woodside has established a number of research projects in order to understand the marine environments in which they operate, notably in the Exmouth Region and the Kimberley Region, including Rankin Bank, Glomar Shoal, Enfield Canyon and Scott Reef. Where scientific data does not exist, Woodside assumes a pristine natural environment exists, and therefore implements all practicable steps to prevent damage. Woodside's corporate values require that we consider the environment and communities in which we operate when making decisions.

Woodside looks after the communities and environments in which it operates. Risks are inherent in petroleum activities; however, through sound management and systematic application of policies, standards, procedures and processes, Woodside considers that despite this risk, the extremely low likelihood of loss of well containment is acceptable.

Internal Context

The Petroleum Activities Program is consistent with Woodside corporate policies, standards, procedures, processes and training requirements as outlined in the Demonstration of ALARP and EPOs, including:

- Woodside Health, Safety and Environment Policy
- Woodside Risk Management Policy
- the SCE Performance Standards developed and implemented for the facility
- Hydrocarbon spill preparedness and response strategies are considered applicable to the nature and scale of the risk, and associated impacts of the response are reduced to ALARP (**Section 2.8.1**)
- Woodside corporate values include working sustainably, with respect to the environment and communities in which we operate, listening to internal and external stakeholders and considering HSE when making decisions. Consultation, outlined below, has been undertaken prior to the Petroleum Activities Program.

External Context – Societal Values

Woodside recognises that its licence to operate from a regulatory and societal perspective is based on historical performance, complying with appropriate policies, standards and procedures, and understanding the expectations of external stakeholders. External stakeholder consultation, outlined below, has been undertaken prior to the Petroleum Activities Program:

- Woodside has consulted with AMSA and WA DoT on spill response strategies. In accordance with the Memorandum of Understanding between Woodside and AMSA, a copy of the Oil Pollution First Strike Plan was provided to AMSA and DoT.
- Other relevant persons were consulted (**Section 5**) and their feedback incorporated into this EP where appropriate.
- By providing hydrocarbon spill response measures that are commensurate with the risk rating, location and sensitivity of the receiving environment (including social and aesthetic values), Woodside believes this addresses societal concerns to an acceptable level.
- Other Requirements (includes Laws, Policies, Standards and Conventions)

- The Petroleum Activities Program is consistent with laws, policies, standards and conventions, including:
- accepted Safety Case (as per the requirements of the OPGGS (Safety) Regulations 2009
- Mutual Aid MoU for relief well drilling is in place
- accepted WOMP as per the requirements of the OPPGS (Resource Management and Administration) Regulations 2011
- notification of reportable and recordable incidents to NOPSEMA, if required, in accordance with **Section 7.11.5**.

The Petroleum Activities Program is consistent with the objectives in the Ningaloo management plans (Management Plan for Ningaloo Marine Park and Muiron Islands Marine Management Areas, Ningaloo Marine Park Management Plan) in relation to water quality, coral, shoreline and intertidal, macroalgal, seagrass, mangroves, seabirds and social and economic values.

Acceptability Statement:

The impact assessment has determined that an accidental hydrocarbon release as a result of a loss of well integrity represents a high current risk rating and may result in catastrophic, long-term impacts (>50 years) on highly valued ecosystems, species, habitat or physical or biological attributes. A number of BIAs for protected species overlap with the PAA and EMBA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice.

The likelihood of a loss of well integrity from operating wells occurring is highly unlikely, given the adopted controls. The adopted controls are considered consistent with industry legislation, codes and standards, and professional judgement and a risk-based assessment has been conducted to better understand the potential consequences and plan oil spill response. The adopted controls also meet the requirements and expectations of Australian Marine Orders, AMSA and AHO identified during impact assessment and consultation. As demonstrated in **Section 6.9,** the potential impacts of hydrocarbon release from loss of well integrity is not inconsistent with the relevant objectives and actions of any applicable recovery plans or threat abatement plans. Regard has been given to relevant conservation advice during the assessment of potential risks. On the basis of the environmental impact assessment outcomes and Woodside's criteria for acceptability outlined in **Section 2.8.2** this is considered an acceptable level of risk.

On the basis of the environmental impact assessment outcomes and Woodside's criteria for acceptability outlined in **Section 2.8.2**, this is considered an acceptable level of risk.

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 12 Woodside will manage its activities to prevent material well loss of containment events from occurring. Well loss of containment risks to the environment are managed to limit risk to	**C 11.1** Maintaining well and hydrocarbon-containing infrastructure integrity to contain reservoir fluids within the well envelope to avoid an MEE.	**PS 11.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5)** and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P10 – Wells, to: – ensure a well retains the mechanical integrity to contain reservoir fluids within the well envelope at all times to avoid an MEE; including operate phase environmentally critical equipment for pressure containment, structures, monitoring	**MC 2.6.1** Records demonstrate implementation of SCE technical Performance Standard(s) and SCE Management Procedure. Refer to **Section 6.6.2**

EPOs, EPSs and MCs For NRC Operations			
Very High[56] through maintenance of prevention and mitigative barriers during the Petroleum Activities Program.		and isolating systems associated with the well. • P09 – Pipeline Systems, to; – detect and support response (alarms and autonomous trips) to significant sand production for applicable systems to ensure the integrity of pressure equipment is not compromised.	
	C 11.2 Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	**PS 11.2** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5)** and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • E04 – Safety Critical Communication Systems: • to allow effective Emergency Response (ER) communications in emergencies, including: – internal communications such as audible and visual warning systems, and voice communications during emergency events – external communications such as voice communications to adjacent facilities, aircraft and vessels, and external incident control centres during emergency events.	**MC 2.6.1** Records demonstrate implementation of SCE technical Performance Standard(s) and SCE Management Procedure. Refer to **Section 6.6.2**
	C 11.3 Maintain Fire and Gas Detection and Alarm Systems on the NRC facility to facilitate prevention and response to fire or gas hazards	**PS 11.3** • Integrity will be managed in accordance with SCE Management Procedure (Section **7.2.5.2**) and SCE technical Performance Standard(s)	**MC 2.6.1** Refer to **Section 6.6.2**

[56] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
		to prevent environment risk related Damage to SCEs for: • F01 – Fire and Gas Detection and Alarm Systems to; – continuously monitor and alert for fire events and significant gas accumulations, initiate actions to minimise event escalation, and support Emergency Response by providing status of situation.	
	C 11.4 Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition so as to prevent or mitigate the effects of a MEE.	**PS 11.4** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5.2**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety Instrumented System • P10 – Wells, – to together detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment and wells in a safe condition to prevent or mitigate the effects of an MEE.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.5 Maintaining environmental incident response equipment to implement initial response to enact the NRC Operations Oil Pollution First Strike Plan.	**PS 11.5** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5.2**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • E05 – Environmental incident response equipment, including: – satellite tracking drifter buoy able to monitor spill movement – sufficient hydrocarbon spill response equipment for control and/or clean-	**MC 2.6.1** Refer to **Section 6.6.2**

EPOs, EPSs and MCs For NRC Operations			
		up of liquid hydrocarbon spills to ocean – minimum equipment coverage, to maintain adequate spill response capability.	
	C 11.6 OPGGS (Resource Management and Administration) Regulations 2011: Accepted WOMP.	**PS 11.6** An accepted WOMP is implemented, and well integrity notification and reporting are undertaken in accordance with the Regulations (as applicable).	**MC 11.6.1** Acceptance letter from NOPSEMA demonstrates acceptance of the WOMP. Records demonstrate applicable NOPSEMA notification and reporting.
	C 11.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the NRC.	**PS 11.7** An accepted Safety Case is implemented, and safety notification and reporting is undertaken in accordance with the Regulations (as applicable).	**MC 11.7.1** Acceptance letter from NOPSEMA demonstrates acceptance of the Safety Case. Records demonstrate applicable NOPSEMA notification and reporting.
	C 11.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 11.8** Incident reports raised for unplanned releases; and Recordable Incidents notified for material unplanned liquid releases to sea, of; • 80L or more of hydrocarbons; or • 1000L or more of environmentally hazardous chemical[57] in any 48-hour period.	**MC 11.8.1** Records demonstrate incident reports raised for unplanned releases, and applicable Recordable Incident notifications completed.

[57] *Chemicals that are not on the CEFAS OCNS Ranked List of Notified Chemicals or CEFAS OCNS listed chemicals which have a CEFAS OCNS substitution warning, a OCNS product warning or are OCNS Hazard Quotient white, blue, orange, purple, A, B or C*

6.7.4 Unplanned Hydrocarbon Release: Subsea Equipment Loss of Containment (MEE-02)

Context		
Pipeline and Riser System – **Section 3.5.3** Subsea Infrastructure – **Section 3.5.4** Platform Well Management and Maintenance Activities – **Section 3.11.2**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Cultural Values and Heritage – **Section 4.9** Socio-economic– **Section 4.10**	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-economic***	***Decision Type***	***Consequence***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Release of hydrocarbons resulting from subsea equipment loss of containment of mid-point of export pipeline and infrastructure		✓	✓	✓	✓	✓	✓	B	B	1	M	LCS GP PJ RBA CV SV	Acceptable if ALARP	**EPO 12**
Release of hydrocarbons resulting from subsea equipment loss of containment from export pipeline and infrastructure at state boundary		✓	✓	✓	✓	✓	✓	B	B	0	M			

Description of Source of Risk

The North Rankin Complex is connected to the following facilities: (1) Goodwyn Alpha Platform (GWA) via a 23 km, 30" inter-field pipeline (IFL); (2) KGP via two 130 km, 40" (1TL) and 42" (2TL) trunklines; (3) Angel Platform via a 50 km, 30" pipeline; (4) Okha Floating Production Storage and Offloading Vessel via a 33 km, 12" pipeline; and (5) two subsea Persephone production wells via an approximately 6.8km, 12" flexible flowline. The 40" 1TL, 30" IFL and Persephone flexible flowline are connected to NRA topside though risers. All other pipelines are connected to either 1TL or 2TL via various different subsea tie-in assemblies for export to shore. NRC has full remote-control capability over Angel and remote monitoring capability over the other interconnecting facilities.

The hazard associated with this Major Environment Event (MEE) is hydrocarbons conveyed in NRC platform subsea equipment (pipelines, flowlines, risers and associated equipment) within the 500m exclusion zone, via the 1TL and 2TL from the NRC 500m exclusion zone to KGP and for the Persephone subsea infrastructure and flowline.

The MEE associated with this hazard is loss of containment from the subsea equipment of 1TL, IFL or 2TL resulting in a hydrocarbon release to the environment. A loss of containment from Persephone subsea infrastructure and flowline does not result in a MEE due to a significantly lower uncontained volume in the event of a spill. The Persephone

flowline release scenario is included in the bowtie for this MEE to demonstrate which controls apply for this infrastructure.

A decision type 'B' has been applied to this risk under the Oil and Gas UK Decision Support Framework. This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk-based tools including the Bowtie Methodology (described in **Section 2.7.3**) and oil trajectory spill modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and stakeholder consultation.

The pipeline, flowline and riser design include a range of measures that specifically aid in minimising the risk of external damage; these include:

- Material selection for strength and corrosion resistant properties;
- Subsea and surface valves to isolate pipelines from the facility and vice versa;
- Subsea shutdown system closes on loss of hydraulic pressure;
- Construction and installation techniques such as stabilisation and self-burial;
- Design of subsea equipment which takes into consideration snag potential and, where practicable, is snag resistant;
- Installation of flowline low pressure alarms (set above minimum operating pressure); and
- Flowline specifications upgraded in line with changing technologies.

The potential hazard sources that could instigate a loss of containment from the NRC pipelines and risers are:

- Internal corrosion;
- External corrosion;
- Erosion (Persephone);
- Overpressure;
- Underpressure;
- General mechanical failure;
- Material degradation, e.g. hydrolysis.
- Excessive temperature;
- Equipment fatigue (risers and structural supports);
- Pipeline stability and freespans;
- Anchor impact / dragging; and
- Loss of control of suspended load from visiting vessel.

Escalation from other MEEs can cause Subsea Equipment Loss of Containment:

- Loss of Structural Integrity (MEE-04 **Section 6.7.6**);
- Loss of Marine Vessel Separation (MEE-05 **Section 6.7.7**); and
- Loss of Control of Suspended Load (MEE-06 **Section 6.7.8**).

Although anchor impact and dragging are potential hazard sources, the risk of pipeline loss of containment as a result of commercial trawling practice is not considered credible according to design risk based analysis, as structural protection frames are in place for key subsea infrastructure. The NRC/PSP development area is located outside of the two demersal trawl fishing areas within proximity of the North West Shelf. Maintenance of subsea infrastructure structural protection frames are included in mechanical integrity controls set out for pipeline integrity performance standard P09 – Pipeline system. Escalation from other MEEs can cause subsea equipment loss of containment:

Subsea/Riser Equipment Loss of Containment – Credible Scenarios

The worst case credible hydrocarbon release scenarios is Scenario 2- the rupture of the 2TL subsea hydrocarbon export trunkline at mid-point of the export pipeline between NRC and KGP; and Scenario 3- the rupture of the 2TL subsea export trunkline at 29.89 km (3 nm state water boundary) from the shore scenario. The mid-point Scenario 2 could result in a 14-hour subsea release of 6,259 m^3 of GWA Export Condensate and associated gas, and the 29.89 km from shore Scenario 3 could result in a 16-hour subsea release of 6,371 m^3 of GWA Export Condensate and associated gas based on an instantaneous full bore release, with activation of the emergency shutdown systems within 10 seconds. These scenarios assumes 2TL is being fully supplied by NRC wells (GWA Export Condensate) which are more condensate rich than NRC wells. Scenario 2 modelling case presented is a rupture of the mid-point of

2TL based on proximity to sensitive receptors (Barrow Island and Montebello Islands) and the influence of prevailing currents at this location and Scenario 3 represents nearshore potential LOC impacts. The scenario of a subsea equipment release at mid-point between NRC and KGP at 1TL and at the 29.89 (state boundary) on 1TL was also identified but deemed to be of lesser consequence as 1TL is operating at its minimum turndown rate and has a smaller volume of hydrocarbons. The subsea loss of containment scenario parameters is summarised in **Table 6-19.**

Table 6-19: Summary of worst-case subsea/riser equipment loss of containment release scenario

Scenario	Hydrocarbon	Duration (hrs)	Depth (m)	Latitude	Longitude	Total condensate release volume (m^3)
Scenario 2 - At mid-point of 2TL between NRC and KGP (MEE-02)	GWA Export Condensate	14	56.5	20°03'55"S	116°33'10"E	6,259
Scenario 3 - At 29.89 km of 2TL from shore (3 nm state water boundary) (MEE-02)	GWA Export Condensate	16	37.1	20°20'20.426"S	116°43'54.310"E	6,371

Decision Type, Risk Analysis and ALARP Tools

Woodside has a good history of implementing industry standard practice in subsea system design and construction. In the company's recent history, it has not experienced any pipeline and riser integrity events that have resulted in significant releases or significant environmental impacts. The facility has never experienced a worst-case loss of pipeline and riser containment in its operational history.

Decision Type

Decision Type B has been applied to this risk under the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk based tools including the bowtie methodology (described in **Section 2.7.3**) and hydrocarbon spill trajectory modelling (described in **Section 6.7.2**). Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and consultation (**Section 5**).

The release of hydrocarbons as a result of subsea equipment loss of containment is considered a Major Environment Event (MEE-02). The hazard associated with this MEE is hydrocarbons in subsea infrastructure (pipelines, flowlines, risers, etc.) tied to or originating from the facility.

Quantitative Spill Risk Assessment

Spill modelling of each of the subsea loss of containment credible spill scenarios was undertaken by RPS (RPS, 2024a), on behalf of Woodside, to determine the fate of hydrocarbon released in each scenario based on the assumptions in **Section 6.7.2** and **Table 6-19, Table 6-23** and **Table 6-24**. Modelling was undertaken over all seasons to address year-round operations. This is considered to provide a conservative estimate of the EMBA, and the potential impacts from the identified worst-case credible release volumes for all subsea loss containment scenarios.

Hydrocarbon Characteristics

Refer to **Section 6.7.2** for a discussion of condensate characteristics, and a detailed description of GWA Export Condensate.

Subsea Plume Dynamics

The loss of subsea containment scenarios will result in a buoyant plume of hydrocarbons, which has been modelled using the OILMAP-Deep numerical model for Scenarios 2 and 3 (summarised in **Table 6-20** and **Table 6-21**, respectively).

Table 6-20: Near-field subsurface discharge model parameters, OILMAP deep model for 14-hour Subsea release of GWA Export Condensate at mid-point of TL2 Export Pipeline between NRC and KGP

OILMAP	Parameter	Scenario 2
Inputs	Release depth (m below sea level)	57
	Oil density (g/cm^3) (at 15°C)	0.760
	Oil viscosity (cP) (at 15°C)	0.765
	Oil temperature (°C)	25
	Hole diameter (m) [in]	1.01 [40.126]
	Oil flow rate (m^3/hr) [bbl/hr]	2,812 [447]
	Gas: Oil ratio (m^3/m^3) [scf/bbl]	1,706 [9,576]
Outputs	Plume diameter (m)	7.36
	Plume height (m above seabed	56.7
	Plume initial rise velocity (m/s)	24.2
	Plume terminal rise velocity (m/s)	19.8
Predicted oil droplet size distribution	20% droplets of size (µm)	3,379
	20% droplets of size (µm)	4,934
	20% droplets of size (µm)	6,414
	20% droplets of size (µm)	8,336
	20% droplets of size (µm)	12,173

Table 6-21: Near shore subsurface discharge model parameters, OILMAP deep model for 16-hour Subsea release of GWA Export Condensate at 29.89 km of TL2 Export Pipeline from shore

OILMAP	Parameter	Scenario 3
Inputs	Release depth (m below sea level)	37.1
	Oil density (g/cm^3) (at 15°C)	0.760
	Oil viscosity (cP) (at 15°C)	0.765
	Oil temperature (°C)	26
	Hole diameter (m) [in]	1.01 [40.126]
	Oil flow rate (m^3/hr) [bbl/hr]	2,505 [398]
	Gas: Oil ratio (m^3/m^3) [scf/bbl]	1,733 [9,731]
Outputs	Plume diameter (m)	1.8
	Plume height (m above seabed	37
	Plume initial rise velocity (m/s)	31.3
	Plume terminal rise velocity (m/s)	25.6
Predicted oil droplet size distribution	20% droplets of size (µm)	3,248
	20% droplets of size (µm)	4,743
	20% droplets of size (µm)	6,165
	20% droplets of size (µm)	8,014

	20% droplets of size (µm)	11,702

Likelihood

In accordance with the Woodside Risk Matrix, given prevention and mitigation measures in place (i.e., design, inspection and maintenance, pipeline marked on marine charts), the likelihood has been taken as 1 (Highly Unlikely). Within the riser platform 500 m exclusion zone, dropped object protection is applied to the pipeline, and as such the risk of dropped object impact leading to a release has also been assessed as 0 (Remote).

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon were considered during the impact assessment for a worst-case subsea or riser loss of containment (presented in the following section). These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (**Section 6.7.2**), and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence Assessment

Environment that May Be Affected

Scenario 2- Subsea release of GWA Export Condensate at mid-point of TL2 Export Pipeline between NRC and KGP

Surface Hydrocarbons

Hydrocarbon spill modelling for surface hydrocarbons indicated that concentrations equal to or greater than the 10 g/m^2 ecological threshold could potentially be found, in the form of slicks, up to approximately 29 km (north-west) from the release location. There is minimal surface hydrocarbon contact with receptors for the worst-case scenario. The probability of films arriving at receptors were <1%. No receptors are predicted to be contacted by surface hydrocarbons at ecological thresholds.

Dissolved Hydrocarbons

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to approximately 411 km south-west from the release location. Receptors with the highest probability of contact at the ecological threshold (50 ppb) include Montebello AMP and Tryal Rocks.

Entrained Hydrocarbons

Entrained oil concentrations equal to or greater than the 100 ppb threshold are predicted to be found approximately 363 km south-west from the release location. Receptors with the highest probability of contact at the ecological threshold (100 ppb) include Montebello AMP, Tryal Rocks, Hermite Island, Montebello Islands and Montebello Islands MP (State).

Accumulated Hydrocarbons

A number of receptors were predicted to potentially receive shoreline hydrocarbons above the 10 g/m^2 threshold in the spill modelling. Receptors with the highest probability of shoreline accumulation at the ecological threshold (10 g/m^2) include Hermite Island, Montebello Islands, and Montebello Islands MP.

Scenario 3- Subsea release of GWA Export Condensate at nearshore TL2 Export Pipeline

Surface Hydrocarbons

The hydrocarbon spill modelling indicated that concentrations of floating hydrocarbons equal to or greater than the 10 g/m^2 threshold could potentially be found, in the form of slicks approxmately33 km north-east from the release location. Receptors with the highest probability of contact with surface hydrocarbons includes Dampier Archipelago coastline and Madeleine Shoals (submerged). However, floating oil is not predicted to accumulate on submerged features at open locations.

Dissolved Hydrocarbons

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to approximately 349 kmkm south-west from the release location. Receptors with the highest probability of contact at the ecological threshold (50 ppb) include Dampier AMP, Dampier Archipelago coastline, Dampier Archipelago Islands, Madeleine Shoals, and Legendre Island. .

Entrained Hydrocarbons

Entrained oil concentrations equal to or greater than the 100 ppb threshold are predicted to be found approximately 365 km south-west from the release location. Receptors with the highest probability of contact at the ecological threshold (100 ppb) include Dampier AMP, Dampier Archipelago coastline, Madeleine Shoals, Legendre Island, and Hammersley Shoal. .

Accumulated Hydrocarbons

A number of receptors were predicted to receive shoreline hydrocarbons above the 10 g/m^2 threshold in the spill modelling. Receptors with the highest probability of contact at the ecological threshold (100 g/m^2) include Dampier Archipelago coastline, Legendre Island, Cohen Island and Keast Island.

Consequence Assessment Summary

The credible worst-case hydrocarbon spill scenario that may arise from MEE-02 may impact upon a range of environmental receptors; refer to **Table 6-22** for a summary of receptors identified by the stochastic spill modelling studies. Potential impacts of a hydrocarbon spill to these receptors are considered in MEE-01; refer to **Section 6.7.2** for a description of potential impacts.

The credible worst-case hydrocarbon volumes that can credibly be released by MEE-02 are significantly smaller and of significantly shorter durations than the credible worst-case loss of well containment volumes considered in MEE-01.

Table 6-22: Environment that May Be Affected – Key receptor locations and sensitivities potentially contacted above impact thresholds by the export pipeline loss of containment scenarios with summary hydrocarbon spill contact

Environmental setting	Receptor	Environmental, social, cultural, heritage and economic aspects presented as per the environmental risk definitions (Woodside's Risk Management Procedure)																												Probability of hydrocarbon contact and fate (%)					
		Physical		Biological																				Socio-economic and cultural						Socio-cultural EMBA		EMBA			
		Water quality	Sediment quality	Marine primary producers			Other communities/habitats								Protected species								Other species								Surface hydrocarbon (1 to 10 g/m²)	Accumulated hydrocarbons (1 to 100 g/m²)	Surface hydrocarbons (≥10 g/m2)	Entrained hydrocarbons (≥100 ppb)	Dissolved hydrocarbons (≥50 ppb)	Accumulated hydrocarbons (≥ 100 g/m2)
		Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds/macroalgae	Mangroves	Spawning/nursery areas	Open water – productivity/upwelling	Non-biogenic 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)					
Australian Marine Parks	Dampier MP	✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓		8		3	56	51	
	Eighty Mile Beach MP (State)	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓					1		
	Gascoyne MP	✓	✓					✓							✓	✓			✓			✓	✓	✓		✓			✓					1	1	
	Montebello MP	✓	✓	✓			✓	✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					21	25	
	Ningaloo MP	✓	✓	✓	✓	✓	✓	✓		✓					✓	✓			✓		✓	✓	✓	✓	✓	✓		✓	✓					1	2	
	Cape Bruguieres	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		1	5		7	1	1
	Dampier Archipelago	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓		17	19	7	48	48	8
	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓						1	
	Karratha - Port Hedland	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓			4		6	4	
	Middle Pilbara – Islands and Shoreline			✓	✓	✓					✓	✓			✓	✓	✓		✓	✓		✓	✓		✓	✓		✓				1		1		

	Northern Pilbara – Islands and Shoreline			✓	✓	✓					✓	✓			✓	✓	✓		✓	✓		✓	✓		✓	✓		✓				1		4	1	
	Port Hedland - Eighty Mile Beach	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓		✓	✓					1		
Islands	Airlie Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1		1		
	Dampier Archipelago Islands (Angel, Cohen, Keast, Conzinc, Eaglehawk, East Lewis Island, Enderby, Gidley, Hauy, Kendrew, Legendre, Malus, Rosemary, West Lewis Island)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		8	19	1	33	29	8
	East Pilbara Island (Bezout, Delambre)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			4		8	6	
	Goodwyn Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2		5	3	
	Montebello Islands (Hermite Island)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			3		6	5	1
	Lacepede Islands (Middle Island)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1		1	1	
	Little Turtle Islet	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Lowendal Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			3		11	5	1
	Mary Anne Group	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Muiron Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2		2	2	
	Passage Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1		4	1	
	Southern Pilbara Islands	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1		3	2	1
	Bessieres Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1				
	Flat Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1		2	1	
	Peak Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			2		2	2	1
	Serrurier Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1		1		
	Sunday Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			1		1	1	
	Barrow and Boodie Islands	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		1		4	1	

	Thevenard Island	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓			✓		✓	✓	✓		1		1		
Marine Parks	Barrow Island MMA	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓				9	4	
	Barrow Island MP (State)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				3	1	
	Montebello Islands MP	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			3		9	7	1
	Muiron Islands MMA	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓			2		2	2	
	Ningaloo Coast WH	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					1	2	
	Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					1	1	
Nature Reserve	Boodie, Double Middle Islands Nature Reserve NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		2		3	1	
	Great Sandy Island NR	✓	✓		✓	✓			✓		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓		✓	✓		✓	✓			1		4	1	
	North Sandy Island NR	✓	✓		✓	✓			✓		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓		✓	✓		✓	✓			1		1		
	Thevenard Island NR	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓			✓		✓	✓	✓		1		1		
Reefs, Shoals and Banks	Barrow Island Reefs and Shoals	✓	✓	✓	✓		✓	✓		✓	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				2	1	
	Brewis Reef	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						1		
	Cod Bank	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						6	3	
	Courtenay Shoal	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓				1		8	5	
	Fortescue Reef	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						1		
	Hammersley Shaol	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓				5		21	16	
	Madeleine Shoals	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓				15		56	52	
	McLennan Bank	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						6	4	
	Meda Reef	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						1		
	Montebello Shoals	✓	✓	✓	✓		✓	✓		✓		✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					4	3	
	Ningaloo Reef	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓						1	
	North West Reefs	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						4	2	
	O'Grady Shoal	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						1		
	Outtrim Patches	✓	✓	✓	✓		✓	✓		✓		✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					2	1	
	Penguin Bank	✓	✓	✓	✓		✓	✓		✓		✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					1	1	
	Poivre Reef	✓	✓	✓	✓		✓	✓		✓		✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					1		
	Ripple Shoals	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						2	1	
	Rosily Rocks	✓	✓	✓			✓	✓		✓					✓	✓	✓			✓		✓		✓	✓	✓		✓						2	1	

	Taunton Reef	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						1		
	Trap Reef	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓						1		
	Tryal Rocks	✓	✓	✓			✓	✓		✓					✓	✓	✓			✓		✓		✓	✓	✓		✓						6	12	

MEE-02 Subsea Equipment Loss of Containment – Risk Analysis
A bowtie risk analysis was undertaken to assess MEE-02; refer to **Figure 6-14**, **Figure 6-15**, **Figure 6-17** and **Figure 6-18** for bowtie diagrams which were an output of Woodside's risk analysis process.

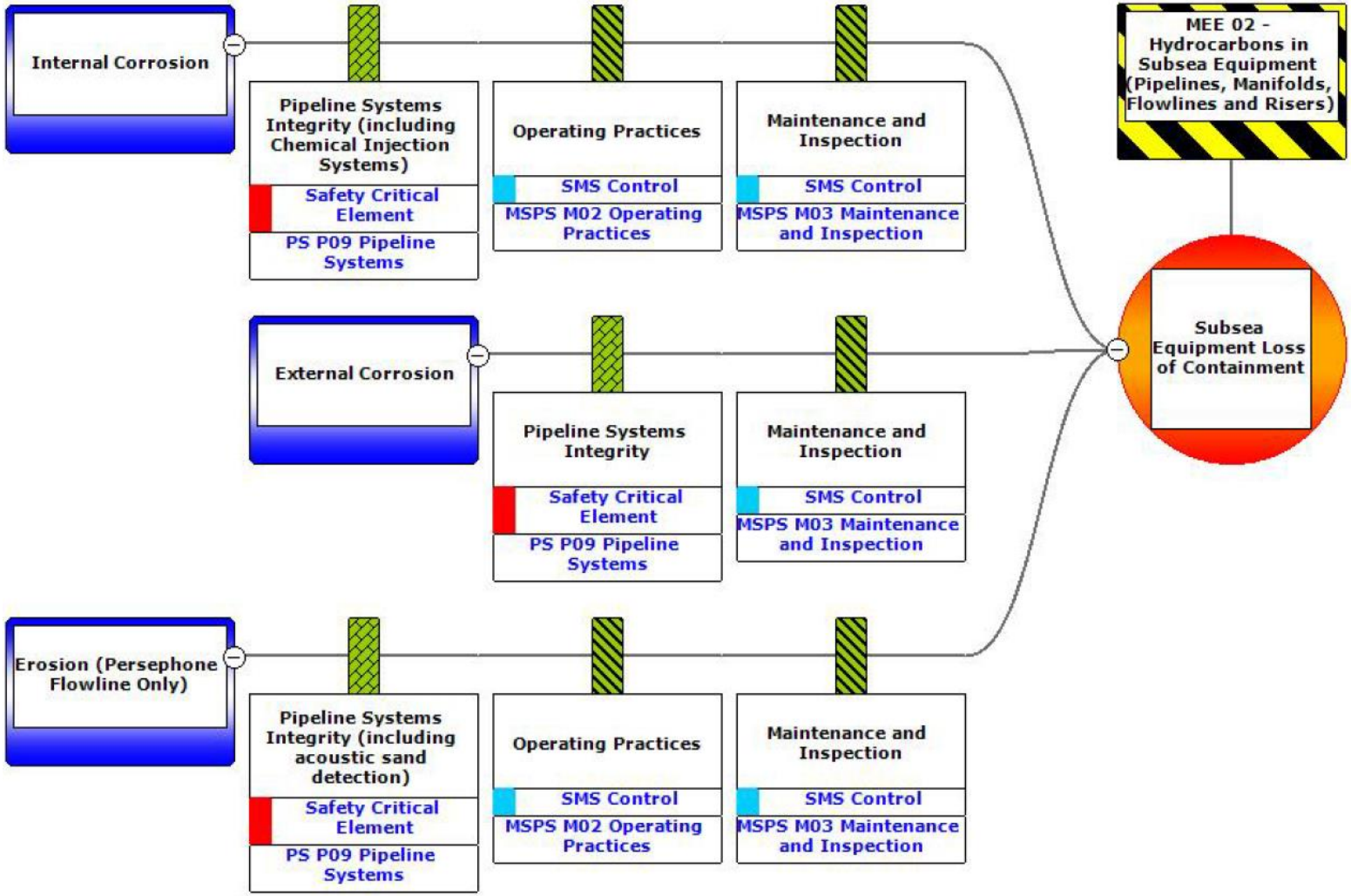


Figure 6-14: MEE-02 Subsea equipment loss of containment (Causes 1 to 3)

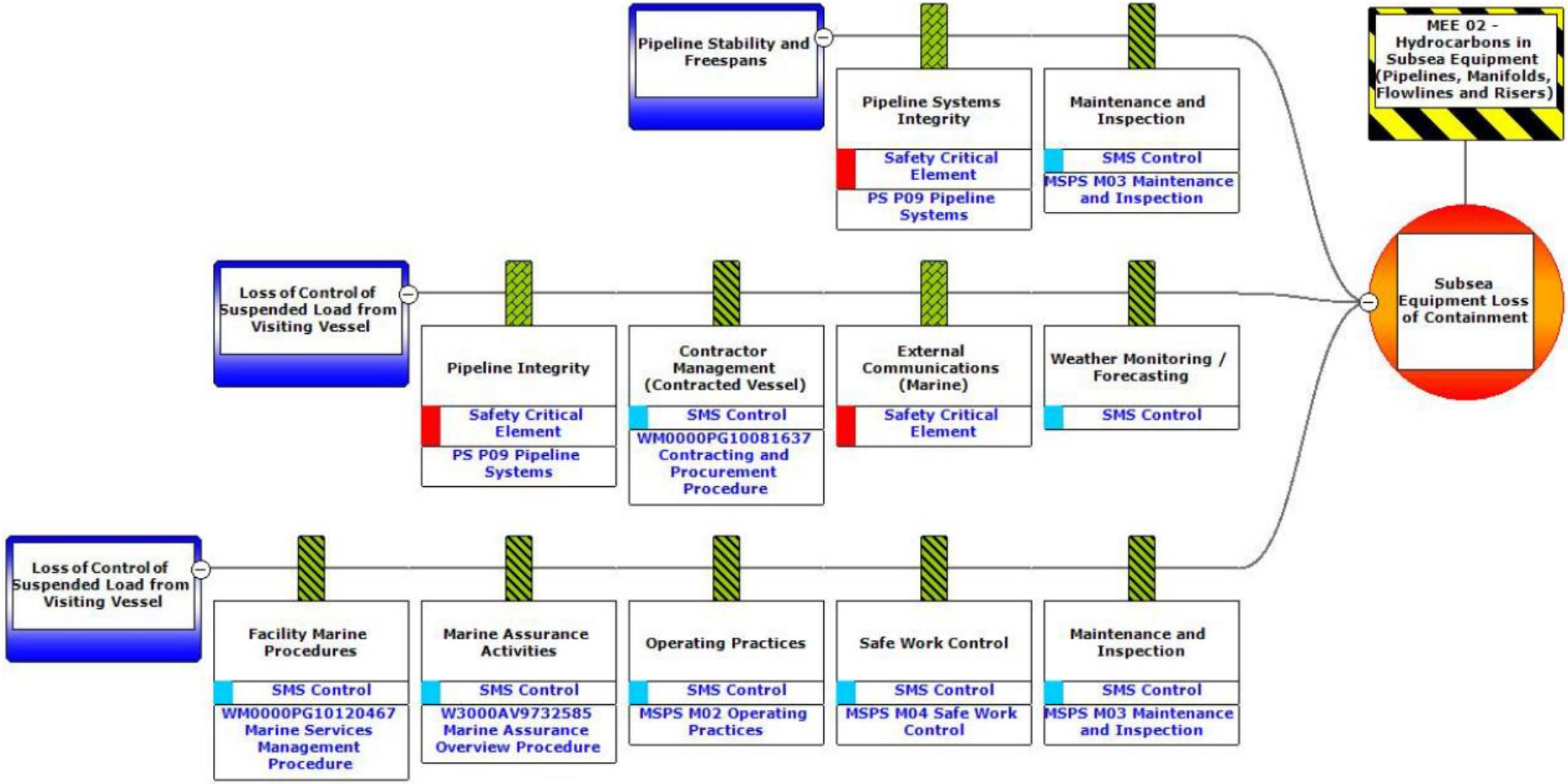


Figure 6-15: MEE-02 subsea equipment loss of containment (Causes 4 to 6)

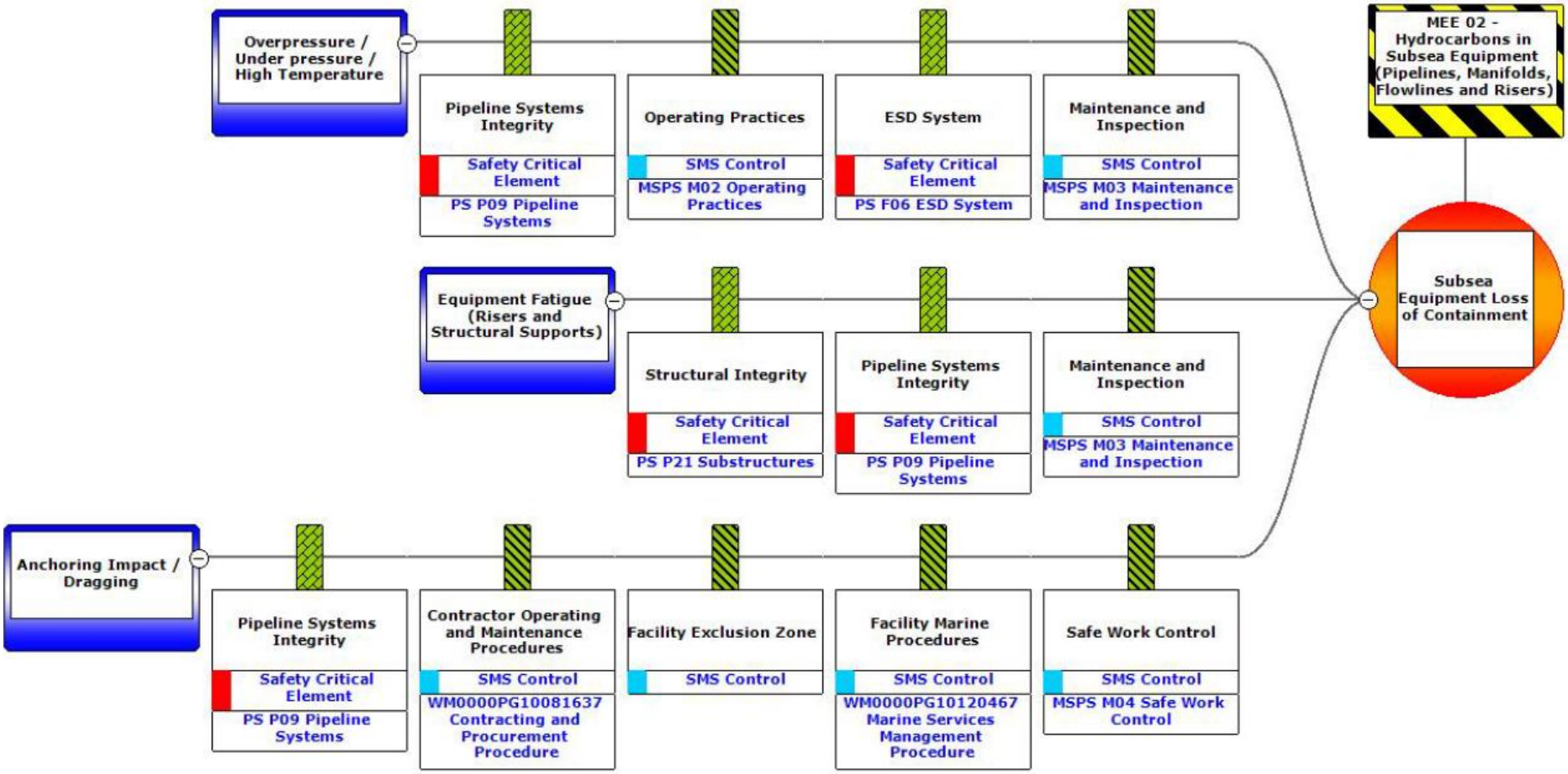


Figure 6-16: MEE-02 Subsea equipment loss of containment (Causes 7 to 9)

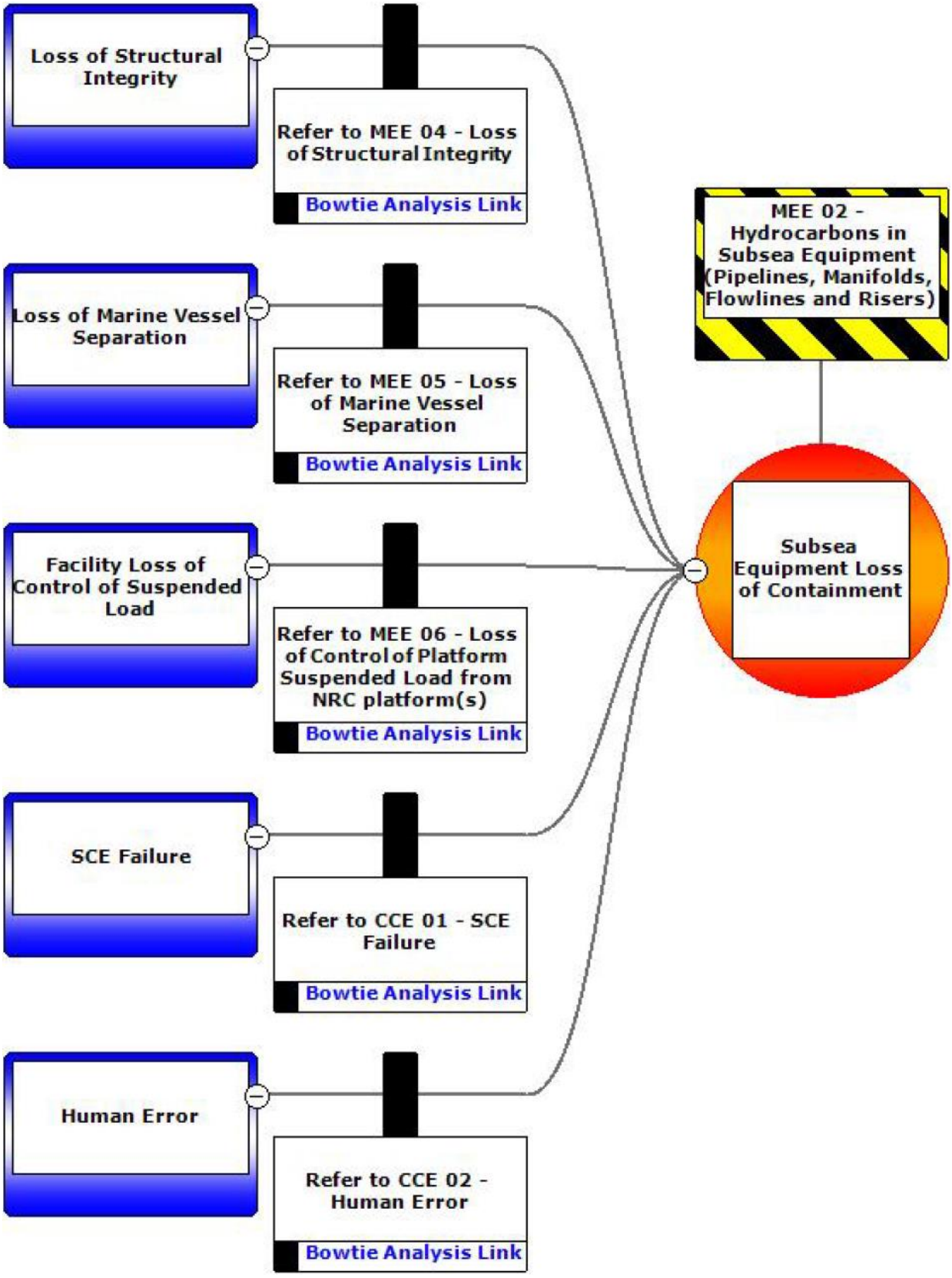


Figure 6-17: MEE-02 Subsea equipment loss of containment (Causes 10 to 14)

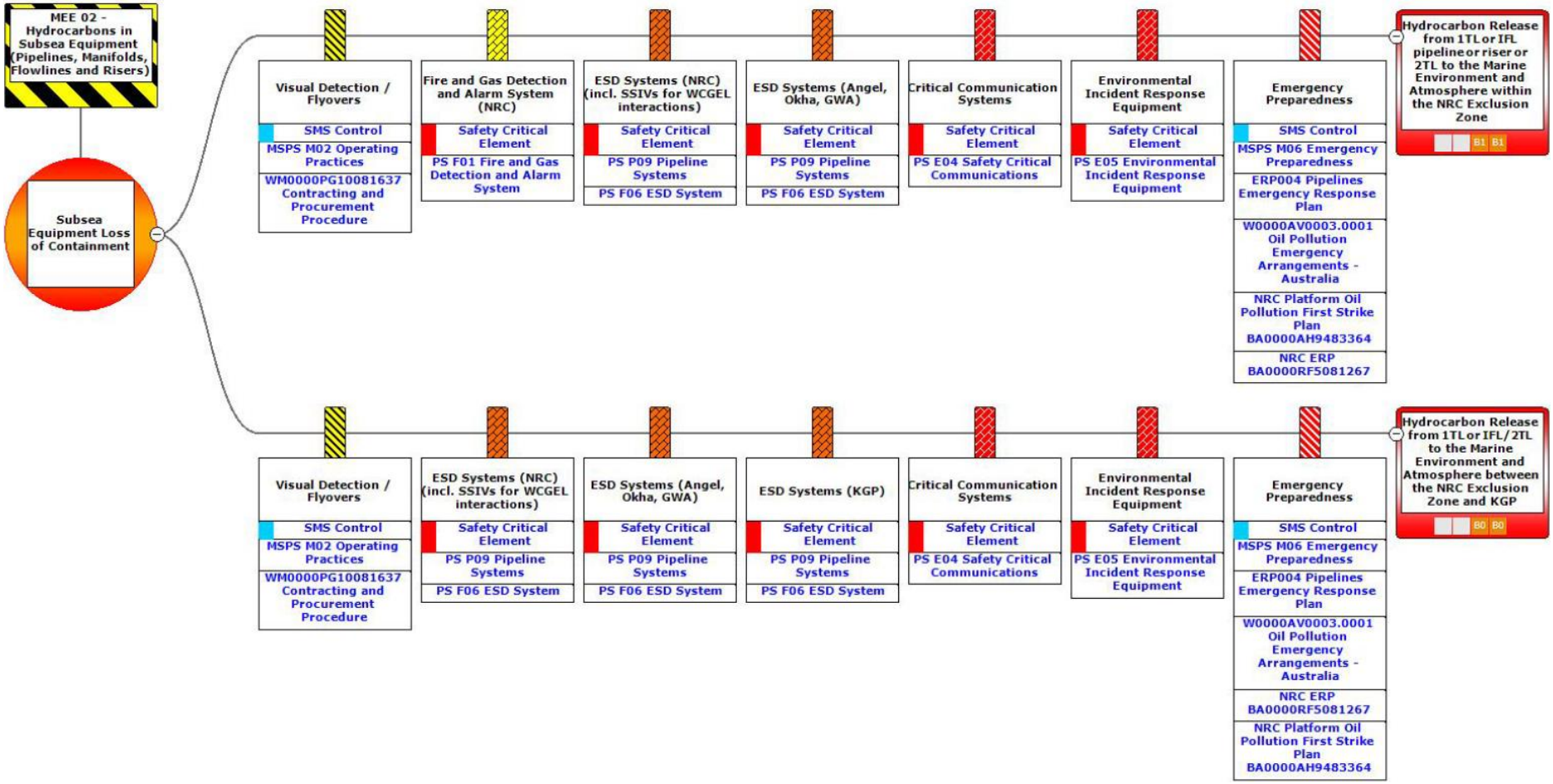


Figure 6-18: MEE-02 Subsea equipment loss of containment (Outcomes 1 to 2)

MEE-02 Subsea Equipment Loss of Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering Controls	Maintaining pipeline, riser and hydrocarbon-containing infrastructure integrity to avoid an MEE.	F06 – Safety instrumented system P09 – Pipeline systems P21 – Substructures	Prevention (Technical)	Yes **C 12.1**
Mitigating Barrier – Safety and Environmental Critical Elements				
Engineering Controls	Maintaining fire and gas detection and alarm systems on the facility to facilitate prevention and response to fire or gas hazards.	F01 – Fire and Gas detection and alarm systems	Detection (Technical)	Yes **C 11.3**
Engineering Controls	Maintain availability of external and internal communication systems to facilitate response to accidents and emergencies.	E04 – Safety Critical Communication Systems	Mitigation (Technical)	Yes **C 11.2**
Engineering Controls	Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition (e.g. through appropriate isolation of hazardous inventories) so as to prevent or mitigate the effects of a MEE	F06 – Safety instrumented system P09 – Pipeline systems P10 – Wells (for flowlines)	Reduction/Control (Technical)	Yes **C 12.2**
Emergency Response	Maintaining environmental incident response equipment to implement initial response to enact the NRC Operations Oil Pollution First Strike Plan.	E05 – Environmental incident response equipment	Mitigation (Technical)	Yes **C 11.5**

MEE-02 Subsea Equipment Loss of Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
Legislation Codes and Standards				
Procedures and Administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the NRC to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, – thus contributing to management of associated potential environmental consequences of MAEs.	NRC Operations Safety Case	Prevention / Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.7**
Procedures and Administration	OPGGS (Safety) Regulations 2009: Accepted Safety Case for the Pipeline to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, – thus contributing to management of associated potential environmental consequences of MAEs.	North West Shelf Pipelines Safety Case	Prevention/Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 12.3**

MEE-02 Subsea Equipment Loss of Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 11.8**
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implementing management systems to maintain: • M02 – Operating practices • M03 – Maintenance and inspections • M04 – Safe work control • Marine Services Management Procedure • Marine Assurance Overview Procedure • Contracting and Procurement Procedure.	MSPS M02 – Operating practices MSPS M03 – Maintenance and inspections MSPS M04 – Safe work control Marine Services Management Procedure Marine Assurance Overview Procedure Contracting and Procurement Procedure	Prevention (Administration)	Yes – See **Section 6.10** Implementation Strategy
Emergency Response and Contingency Planning	Implement management systems to maintain: • M06 – Emergency preparedness • NRC Emergency Response Plan • NRC Operations Oil Pollution First Strike Plan • Oil Pollution Emergency Arrangements – Australia • Contracting and Procurement Procedure.	MSPS M06 – Emergency preparedness NRC Emergency Response Plan NRC Operations Oil Pollution First Strike Plan Oil Pollution Emergency Arrangements – Australia Contracting and Procurement Procedure	Mitigation (Administration)	Yes See **Section 6.10** Implementation Strategy Refer to **Appendix D** for discussion around the ALARP assessment of controls related to hydrocarbon spill response

MEE-02 Subsea Equipment Loss of Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
Risk Based Analysis				
For risks identified as MEEs, a detailed risk based Bowtie Analysis (as outlined in **Section 2.7.3**) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event. Application of Woodside's Risk Management Procedures and implementation of the NRC and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: • ongoing hazard identification, risk assessment and the identification of control measures • ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability. For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g., inspection, maintenance, testing and monitoring requirements) to ensure technical integrity. Bowtie analysis was undertaken to assess MEE-02; refer to **Figure 6-14** A quantitative spill risk assessment was undertaken (refer **Section 6.7.2** for details of the method used).				
Company Values				
Corporate values require all personnel at Woodside to comply with appropriate policies, standards, procedures and processes while being accountable for their actions and holding others to account in line with Our Values. As detailed above, the Petroleum Activities Program is undertaken in line with these policies, standards and procedures that include suitable controls to prevent subsea flowline and riser loss of containment, and response should a loss of containment occur.				
Societal Values				
Due to the Petroleum Activities Program's proximity to sensitive receptors (e.g., Montebello Islands) and the potential extent of the wider EMBA, the pipeline and riser loss of containment risk rating presents a Decision Type B in accordance with the decision support framework described in **Section 2.6.1**. Consultation was undertaken for this program to identify the views and concerns of relevant persons, as described in **Section 5**. Woodside has sent an Activity Factsheet to all identified relevant persons regarding the Petroleum Activities Program (**Section 5**). Woodside has consulted with AMSA and WA DoT on spill response strategies. In accordance with the MoU between Woodside and AMSA, a copy of the Oil Pollution First Strike Plan was provided to AMSA.				

MEE-02 Subsea Equipment Loss of Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood unplanned hydrocarbon release as a result of a pipeline and riser loss of containment.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of pipelines and risers, ensuring the export pipeline and risers are operated within their design envelope through operating practices, and assurance through maintenance and inspection. If hydrocarbon loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the Safety Cases, SCE management procedures including performance standards for SCEs and MSPSs for Safety Critical Management System Controls.

The application of Woodside Risk Management Procedures ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the technical performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences and the reduction in likelihood of a loss of containment from the redundant NRC flowlines as the mechanisms for erosion and corrosion are greatly reduced it is considered that MEE risk associated with a pipeline and riser loss of containment is managed to ALARP.

Demonstration of Acceptability

Acceptability Statement:

Worst case loss of subsea equipment containment has been evaluated as having a 'moderate' (B1) level of risk rating. As per **Section 2.6.3**, Woodside considers 'moderate' (B1) risk ratings as acceptable if ALARP is demonstrated using good industry practice, company and societal values and risk based analysis are considered, 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 6.7.3** (MEE-01). The considerations include principles of Ecological Sustainable Development, internal context, external context and other requirements (including laws, policies, standards and conventions).

On the basis of the environmental impact assessment outcomes and Woodside's criteria for acceptability outlined in **Section 2.8.2**, this is considered an acceptable level of risk.

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 13 Woodside will manage its activities to prevent material subsea loss of containment events from occurring.	**C 12.1** Maintaining pipeline, riser and hydrocarbon-containing infrastructure integrity to avoid an MEE.	**PS 1223.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent	**MC 2.6.1** Refer to **Section 6.6.2**

EPOs, EPSs and MCs For NRC Operations			
Subsea loss of containment risks to the environment are managed to limit risk to High[58] through maintenance of prevention and mitigative barriers during the Petroleum Activities Program.		environment risk related damage to SCEs for: • E04 – Critical Communications • F06 – Safety instrumented system • P09 – Pipeline systems • P21 – Substructures, to together: – maintain the minimum required mechanical and structural integrity to prevent loss of containment that may result in an MEE – detect and respond to pre-defined initiating conditions to protect mechanical integrity.	
	Refer to **C 11.3** Refer to **Section 6.7.3**	**PS 11.3** **Refer Section 6.7.3**	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.2 Refer to **Section 6.7.3** Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	**PS 11.2** Refer to **Section 6.7.2**.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 12.2 Maintaining Safety Instrumented System (Safety Instrumented Functions and emergency shutdown actions) to detect and respond to pre-defined initiating conditions, and/or initiate responses that put the process plant, equipment and wells in a safe condition (e.g., through appropriate isolation of hazardous inventories) so as to prevent or mitigate the effects of an MEE.	**PS 12.2** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety instrumented system • P09 – Pipeline systems • P10 – Wells (for flowlines), – to together detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the flowlines (via P10) in a safe condition so as to	**MC 2.6.1** Refer to **Section 6.6.2**

[58] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
		prevent or mitigate the effects of a MEE.	
	C 11.5 Refer to **Section 6.7.3**	**PS 11.5** Refer to **Section 6.7.3**	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.7 Refer to **Section 6.7.3**.	**PS 11.7** Refer to **Section 6.7.3**	**MC 2.11.1** Refer to **Section 6.6.2**
	C 12.3 OPGGS (Safety) Regulations 2009: Accepted Safety Case for the Pipeline.	**PS 12.3** An accepted Safety Case is implemented, and safety notification and reporting is undertaken in accordance with the regulations (as applicable).	**MC 12.3.1** Acceptance letter from NOPSEMA demonstrates acceptance of the Safety Case.
	C 11.8 Refer to **Section 6.7.3**	**PS 11.8** Refer to **Section 6.7.3**	**MC 11.8.1** Refer to **Section 6.7.3**
	Mitigation – hydrocarbon spill response	Refer to **Appendix D**: Oil Spill Preparedness and Response Mitigation Assessment for discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

6.7.5 Unplanned Hydrocarbon Release: Topsides Loss of Containment (MEE-03)

Context		
Topsides – **Section 3.5.1** Subsea Infrastructure – **Section 3.5.4** Process Description – **Section 3.7.2** Hydrocarbon and Chemical Inventories and Selection – **Section 3.10**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Cultural Values and Heritage – **Section 4.9** Socio-economic– **Section 4.10**	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-economic***	***Decision Type***	***Consequence***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Hydrocarbon release from topside process equipment to the marine environment and atmosphere.		✓	✓	✓	✓	✓	✓	B	C	1	M	LCS GP PJ RBA	Acceptable if ALARP	**EPO 13**
Hydrocarbon release from topsides non-process equipment to the marine environment.			✓	✓		✓	✓	B	D	1	M			

Description of Source of Risk

The hydrocarbon processing equipment on the NRC contains a considerable volume of hydrocarbons. Extreme environmental conditions or other causes which result in an exceedance of the design criteria and a catastrophic failure of the facility and individual equipment (e.g., cranes, flare tower, etc) has been identified as a potential MEE (MEE-03). Catastrophic structural failure of the facility could lead to the release of hydrocarbons to the environment.

The following events could lead to loss of containment from the topsides:

- internal corrosion;
- external corrosion;
- erosion;
- overpressure;
- low temperature;
- equipment fatigue/ overstress;
- rotating equipment failure/ uncontrolled transfer (including overflow);
- rotating equipment failure;
- overheating of hot oil system; and
- tubing failure of hot oil system.

A number of common failure causes due to human error and Safety Critical Equipment (SCE) failures are presented in the generic Human Error and SCE failure bowties in **Section 7.2.5.**

Escalation from other MEEs can also potentially lead to cause Topsides Loss of Containment:

- subsea loss of containment (MEE-02; **Section 6.7.4**)
- loss of marine vessel separation (refer to MEE-05; **Section 6.7.7**)
- loss of control of suspended load (refer to MEE-06; **Section 6.7.8**).

Loss of Controlled Flight is considered as a potential escalation cause, and is described in the NRC Safety Case (MAE-09).

Process Release

The worst-case credible topside process release scenario is a loss of containment of 276 m^3 of topside condensate based on modelling undertaken for a topside process release on GWA Facility. This modelling of 276 m^3 topsides condensate release is a conservative representation of the maximum credible 78 m^3 topside condensate release at NRC.

The largest isolatable topsides process inventory is the NRB Separation System which contains 78 m^3 of condensate and 290 m^3 of hydrocarbon gas. For NRA, the largest hydrocarbon liquid inventory is from the dewatering system (32 m^3) and hot oil (12 m^2).

Non-Process Release

The largest topsides non-process inventory is 440 m^3 from the Diesel Storage Leg B-2 on NRA and 180 m^3 on NRB.

The following hydrocarbon inventories were considered as the worst-case topside's loss of containment scenario:

Instantaneous release from the NRC of:

- Topsides process: 276 m^3 NRC Topsides Condensate
- Topsides non-process: 440 m^3 Topsides Diesel

The locations, hydrocarbon types and volumes for Scenario 4 are provided in **Table 6-23**.

Table 6-23: Summary of worst-case topsides loss of containment release scenario

Scenario	Hydrocarbon	Duration (hrs)	Depth (m)	Latitude (D°M'S'' S)	Longitude (D°M'S'' E)	Total Release Volume (m^3)
Topsides loss of containment	NRC Topsides Condensate	Instantaneous	Surface	19°35'03.23" 19°35'02.52"	116°08'17.06" 116°08'11.32"	276 m^3
	Topsides Diesel	Instantaneous	Surface	19°35'03.23"	116°08'17.06"	440 m^3

Decision Type, Risk Analysis and ALARP Tools

Woodside has a good history of implementing industry standard practice in structural design, construction and operation. In the company's 70-year history, it has not experienced any loss of structural integrity events that have resulted in significant releases or significant environmental impacts. The facility has never experienced a worst-case loss of containment in its operational history.

Decision Type

Decision Type B has been applied to this risk under the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk-based tools including the bowtie methodology (described in **Section 2.7.3**) and hydrocarbon spill trajectory modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability through peer review, benchmarking and consultation.

The release of hydrocarbons from a loss of structural integrity is considered an MEE (MEE-03). The hazard associated with this MEE is hydrocarbons in pipelines, risers, process and non-process inventories and potentially vessels, well, and the riser platform itself.

Quantitative Spill Risk Assessment

Credible worst-case stochastic spill modelling for the scenarios associated with MEE-01 (**Section 6.7.3**), MEE-02 (**Section 6.7.4**) and MEE-04 (**Section 6.7.7**) has been undertaken. Results of these modelling studies have been used to inform the consequence assessment for these MEEs; these assessments are applicable to the consequence assessment for a loss of structural integrity event.

Likelihood

In accordance with the Woodside Risk Matrix (**Section 2.6.3**), a worst-case topsides loss of containment has been defined as a '1' 'Highly Unlikely' event as it is 'has occurred once or twice in the industry' (experience based likelihood) and aligns with a frequency of a '1 in 10,000 to 1 in 100,000 year' event.

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon was considered during the impact assessment for a loss of structural integrity. These considerations were informed primarily by the outputs from the stochastic modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (**Section 6.7.2**), and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence Assessment

Environment that May Be Affected

As discussed above, the potential impacts from hydrocarbon release caused by a loss of structural integrity are those which would result from:

- subsea equipment loss of containment (MEE-02; **Section 6.7.4**)
- loss of marine vessel separation (MEE-05; **Section 6.7.7**)

The potential impacts associated with these impacts are therefore discussed in the above-mentioned sections.

Surface Hydrocarbons

The gas and condensate components of a worst case topsides loss of containment are not expected to result in surface hydrocarbons above impact thresholds (> 10 g/m^2). The diesel component may result in floating hydrocarbons beyond the immediate vicinity of the release location. No contact of floating hydrocarbons above impact thresholds with key receptor locations was indicated by the modelling.

Entrained Hydrocarbons

The diesel component of a topside release has the potential to become entrained and may extend beyond the release location.Entrained hydrocarbons from the condensate component of a topsides release may become entrained and hence, extend beyond the vicinity of the release location however it is expected to be within the diesel modelled scenario due to the considerably smaller volumes. No contact of entrained hydrocarbons above impact thresholds with key receptor locations was indicated by the modelling.

Dissolved Hydrocarbons

Dissolved hydrocarbons above impact thresholds from a topsides loss of containment are expected to be localised to the immediate area around the release location. Modelling of the diesel component of a topside release did not indicate dissolved hydrocarbons above impact thresholds would occur. No contact with key receptor locations above impact thresholds is expected to occur.

Accumulated Hydrocarbons

No accumulated hydrocarbons above impact thresholds were predicted by modelling for the release scenarios considered in MEE-03.

Seabed Disturbance

In the event of loss of structural integrity, there is the potential for collapse of the riser platform leading to an incremental increase of the facility's footprint on the seabed. The potential area that would be affected can conservatively be defined as the existing riser platform footprint plus 100 m in all directions; that is approximately 0.0245 km^2 for NRA ~125 m water depth by 196 m NRA platform height) approximately 0.0325 km^2 for NRB (125 m water depth by 260 m NRB platform height). The benthic habitats surrounding the riser platform have been subject to historical disturbance (e.g., facility construction and operation) and are considered to be of low ecological value (although it is acknowledged the facility provides artificial hard substrate which has formed the basis of relatively high biodiversity communities at this location when compared to the surrounding seabed). Subsequently, the physical disturbance to the seabed resulting from the collapse of the riser platform would be localised but may result in long-term disturbance to benthic communities.

The riser platform could also act as a source of environmental contaminants due to material on board the platform (e.g., chemical/hydrocarbon inventories, corrosion of structural materials, debris, etc). The potential for contamination

would diminish over time, as the structure degrades. Depending on the nature of the loss of structural integrity, complete or partial salvage of the riser platform may not be feasible. These structures are expected to be colonised by marine organisms, and a reef habitat will develop over time on the structures.

While the Offshore Facility Operational Area overlaps the Ancient Coastline at 125 m Depth Contour KEF, the KEF is not close to the riser platform.

MEE-03 Loss of Structural Integrity – Risk Analysis
A bowtie risk analysis was undertaken to assess MEE-03; refer to the **Figure 6-19**, **Figure 6-20, Figure 6-21,** and **Figure 6-23** for bowtie diagrams which were an output of Woodside's risk analysis process.

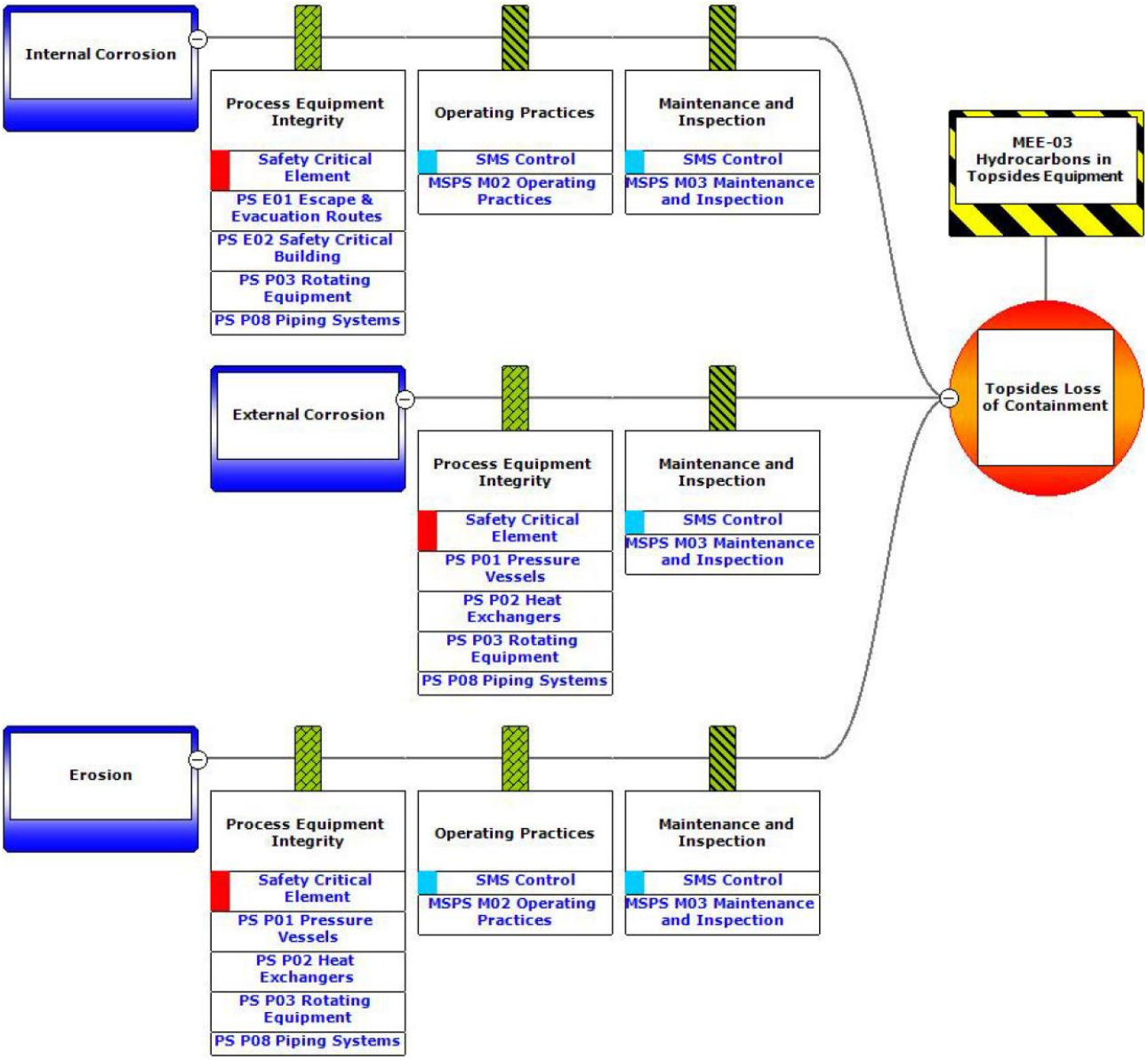


Figure 6-19: MEE-03 Topsides Loss of Containment (Causes 1 to 3)

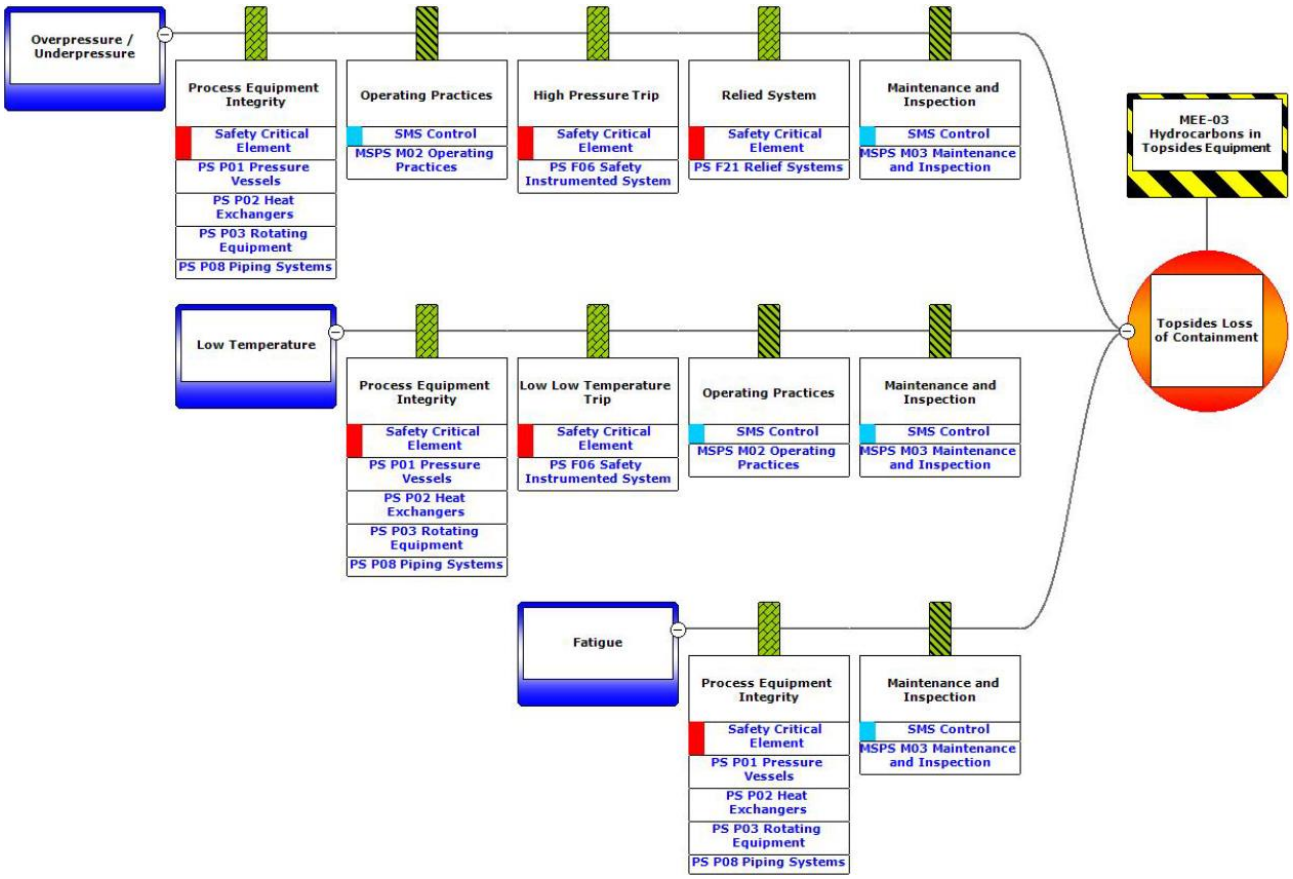


Figure 6-20: MEE-03 Topsides Loss of Containment (Causes 4 to 6)

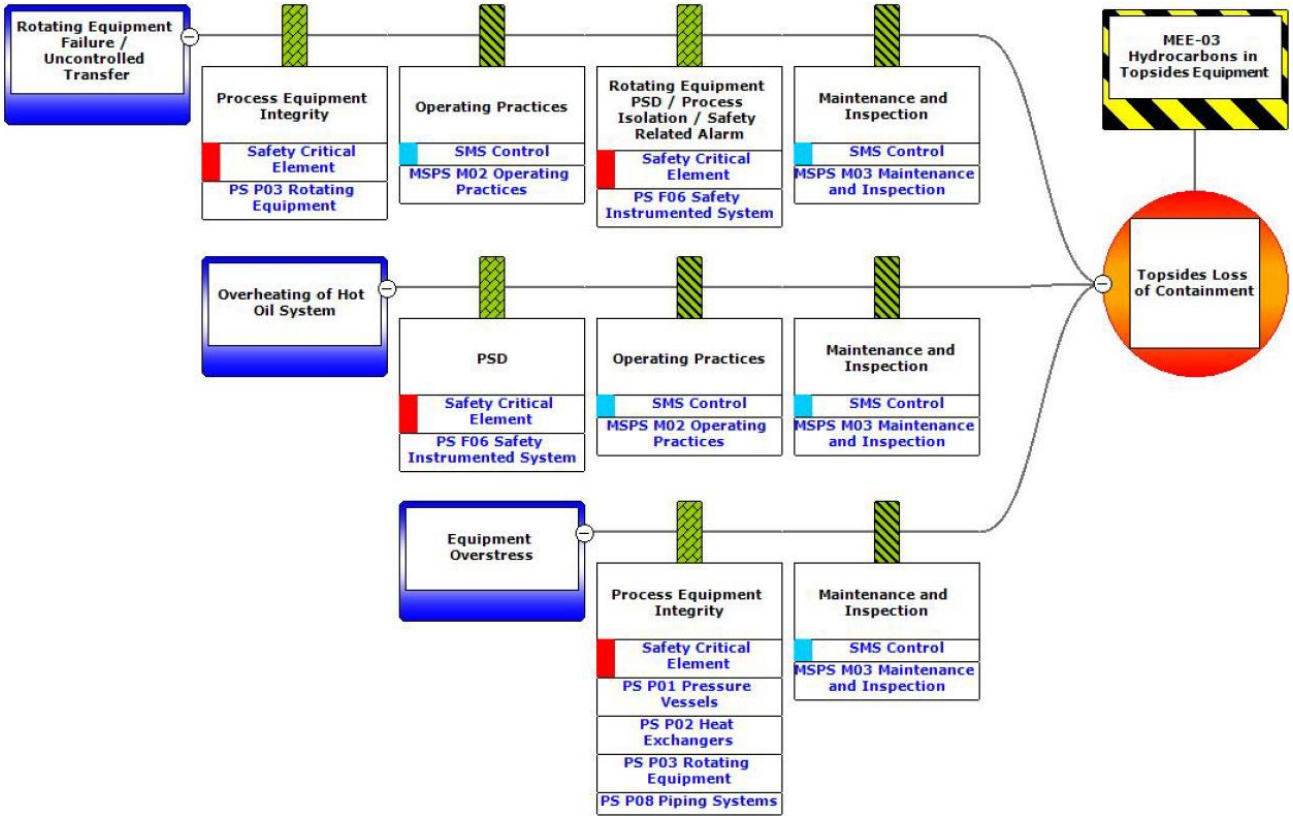


Figure 6-21: MEE-03 Topsides Loss of Containment (Causes 7 – 9)

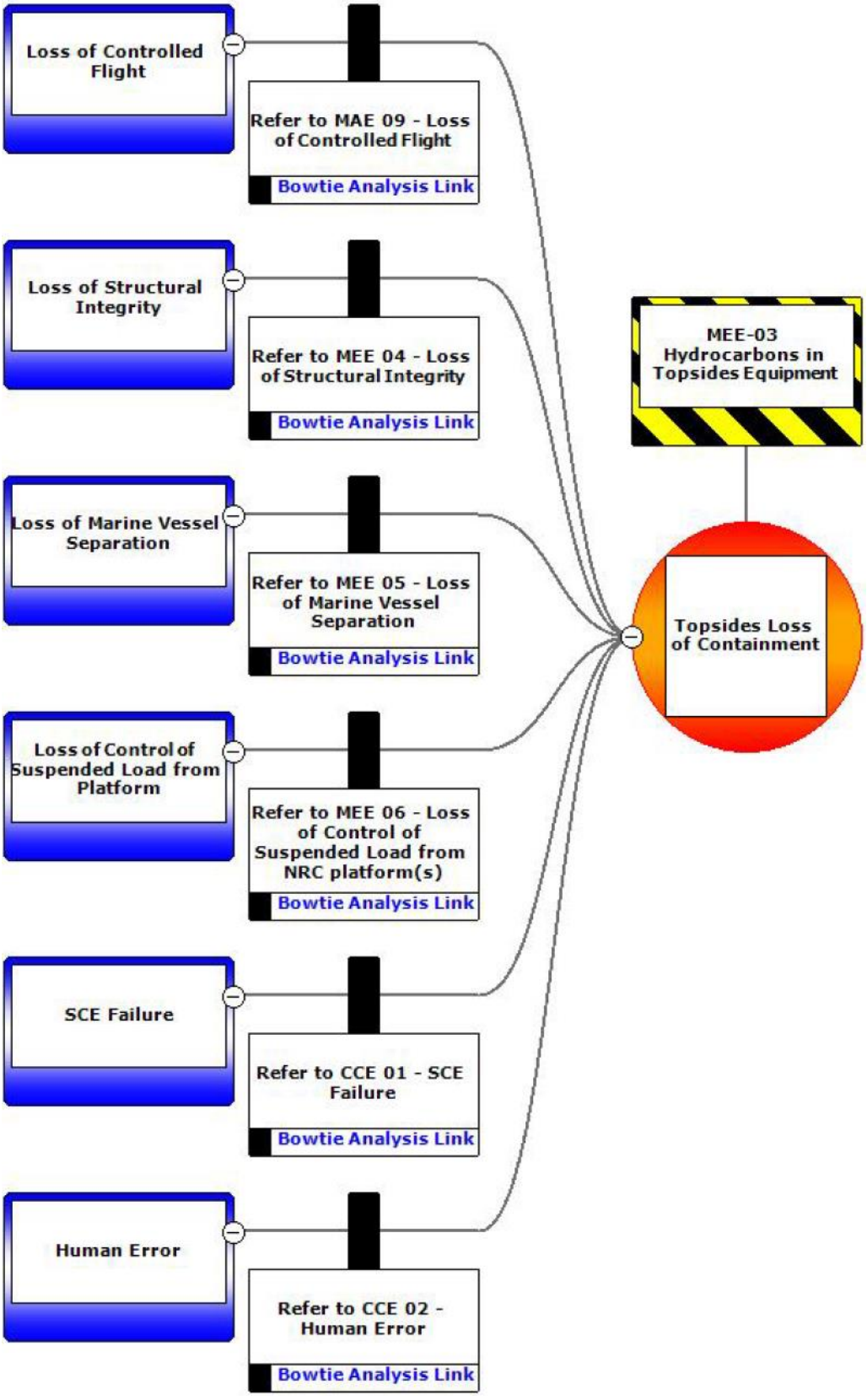


Figure 6-22: MEE-03 Topsides Loss of Containment (Causes 10 – 15)

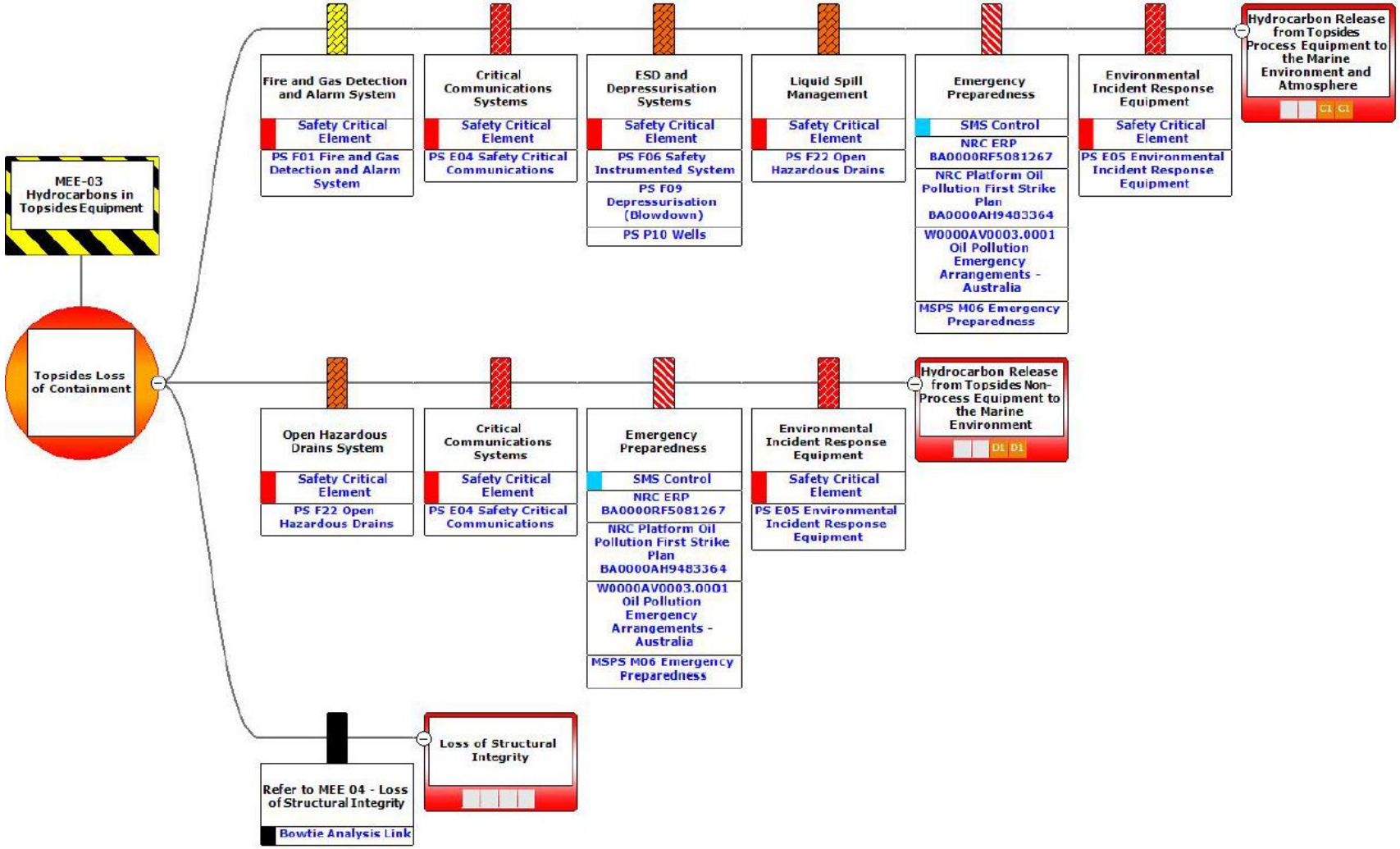


Figure 6-23: MEE-03 Topsides Loss of Containment (Outcomes)

MEE-03 Topsides Loss of Containment – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering Controls	Maintain topsides hydrocarbon-containing infrastructure integrity	P01 – Pressure Vessels P02 – Heat Exchangers P03 – Rotating Equipment P08 – Piping Systems	Prevention (Technical)	Yes **C 13.1**
Engineering Controls	Maintain Safety Instrumented Systems and Relief System to prevent hydrocarbon loss of containment in order to prevent a MEE	F06 – Safety Instrumented System F21 – Relief Systems	Prevention (Technical)	Yes **C 13.2**
Mitigating Barrier – Safety and Environmental Critical Elements				
Engineering Controls (per MEE-02)	Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	E04 – Safety critical communication systems	Mitigation (Technical)	Yes **C 11.2**
Engineering Controls (per MEE-02)	Maintaining fire and gas detection and alarm systems on the facility to facilitate prevention and response to fire or gas hazards.	F01 – Fire and gas detection and alarm systems	Detection (Technical)	Yes **C 11.3**
Engineering Controls (per MEE-02)	Maintain Safety Instrumented Systems (e.g. ESD and safety instrumented functions) system, Blowdown and Open Hazardous Drains system to isolate, remove and control hazardous inventories so as to mitigate the effects of a MEE/ prevent escalation to a MEE.	F06 – Safety Instrumented System F09 – Depressurisation (Blowdown) to; F22 – Open Hazardous Drains	Reduction/Control (Technical)	Yes **C 13.3**
Emergency Response	Maintain environmental incident response equipment to implement initial response to enact the NRC Operations Oil Pollution First Strike Plan.	E05 – Environmental Incident Response Equipment	Mitigation (Technical)	Yes **C 11.5**

Legislation Codes and Standards				
Procedures and Administration	OPGGS (Safety) Regulations 2009: Accepted Safety Case for the NRC to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, • thus contributing to management of associated potential environmental consequences of MAEs.	NRC Safety Case	Prevention/Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.7**
	Incident reports are raised for unplanned releases within event reporting system	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 12.4**
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implementing management systems to maintain: • M02 – Operating practices • M03 – Maintenance and inspections.	MSPS M02 – Operating practices MSPS M03 – Maintenance and inspections	Prevention (Administration)	Yes – See **Section 6.10** Implementation Strategy

Procedures and Administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 11.8**
Emergency Response and Contingency Planning	Implement management systems to maintain: • M06 – Emergency preparedness • NRC Emergency Response Plan • NRC Operations Oil Pollution First Strike Plan • Oil Pollution Emergency Arrangements – Australia.	MSPS M06 – Emergency preparedness NRC Emergency Response Plan NRC Operations Oil Pollution First Strike Plan Oil Pollution Emergency Arrangements – Australia	Mitigation (Administration)	Yes – See **Section 6.10** Implementation Strategy Refer to **Appendix D** for discussion around the ALARP assessment of controls related to hydrocarbon spill response.

Risk Based Analysis

For risks identified as MEEs, a detailed risk based Bowtie Analysis (as outlined in **Section 2.7.3**) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event.

Application of Woodside's Risk Management Procedures and implementation of the NRC Safety Case ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g., inspection, maintenance, testing and monitoring requirements) to ensure technical integrity.

A quantitative spill risk assessment was undertaken (refer **Section 6.7.2** for details of the method used).

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood of a loss of structural integrity.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of the facility, ensuring the equipment is operated within the design envelope through operating practices, and assurance through maintenance and inspection. If a loss of structural integrity occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the NRC Safety Case, SCE management procedures including performance standards for SCEs, and MSPSs for Safety Critical Management System Controls.

The application of Woodside Risk Management Procedures and implementation of the NRC Safety Case ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of facility operations, it is considered that MEE risk associated a loss of structural integrity is managed to ALARP.

Demonstration of Acceptability

Acceptability Statement:

A loss of structural integrity has been evaluated as having a 'Moderate' (B0 to D1) risk rating (including the consideration of applicable MEEs). As per **Section 2.6.1**, Woodside considers 'Moderate' (B0) risk ratings as acceptable if managed to ALARP. Due to the consequence associated with MEE-03, Decision Type B has been applied, and ALARP is 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.

Acceptability is demonstrated with regard to the considerations described in **Section 6.7.3** (MEE-01). The considerations include principles of Ecological Sustainable Development, and other requirements (including laws, policies, standards and conventions).

On the basis of the environmental impact assessment outcomes and Woodside's criteria for acceptability outlined in **Section 2.8.2** this is considered an acceptable level of risk.

EPOs, EPSs and MCs For NRC Operations

Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 13 Woodside will manage its activities to prevent topsides loss of containment events from occurring. Topsides loss of containment risks to the environment are managed to limit risk to High[59] through maintenance of prevention and mitigative barriers during the	**C 13.1** Maintaining topsides hydrocarbon-containing infrastructure integrity to ensure availability of critical systems during a major accident or environment event, and prevent structural failures from contributing to escalation of an MEE.	**PS 13.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P01 – Pressure Vessels • P02 – Heat Exchangers • P03 – Rotating Equipment • P08 – Piping Systems; to together: – provide minimum required mechanical integrity for identified	**MC 2.6.1** Refer to **Section 6.6.2**

[59] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
Petroleum Activities Program.		SCE systems (piping, heat exchangers, rotating equipment, and pressure vessel) for operation within defined integrity limits so as to prevent a loss of containment that may result in a MEE.	
	C 13.2 Maintain Safety Instrumented Systems and relief system to prevent hydrocarbon loss of containment in order to prevent a MEE.	**PS 13.2** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety Instrumented System to: – detect and respond to pre-defined initiating conditions to protect mechanical integrity and prevent loss of containment (including uncontrolled diesel transfer/overflow). • F21 – Relief Systems to; – protect pressurised equipment, equipment exposed to high pressures and piping from a loss of containment to prevent escalation to a MEE.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.2 Refer to **Section 6.7.3.**	**PS 11.2** Refer to **Section 6.7.3.**	**MC 2.6.1** Refer to **Section 6.6.2**

EPOs, EPSs and MCs For NRC Operations			
	C 12.3 Refer to **Section 6.7.3.**	**PS 12.3** Refer to **Section 6.7.3.**	**MC 2.6.1** Refer to **Section 6.6.2**
	C 13.3 Refer to **Section 6.6.4**.	**PS 13.3** Refer to **Section 6.6.4**.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.5 Refer to **Section 6.7.3.**	**PS 11.5** Refer to **Section 6.7.3.**	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.7 Refer to **Section 6.7.3**	**PS 11.7** Refer to **Section 6.7.3**	**MC 11.7.1** Refer to **Section 6.7.3**

EPOs, EPSs and MCs For NRC Operations			
	C 11.8 Refer to **Section 6.7.3**	**PS 11.8** Refer to **Section 6.7.3**	**MC 11.8.1** Refer to **Section 6.7.3**

6.7.6 Unplanned Hydrocarbon Release: Loss of Structural Integrity (MEE-04)

Context		
Topsides – **Section 3.5.1** Subsea Infrastructure – **Section 3.5.4** Process Description – **Section 3.7.2** Hydrocarbon and Chemical Inventories and Selection – **Section 3.10**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Cultural Values and Heritage – **Section 4.9** Socio-economic– **Section 4.10**	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-economic***	***Decision Type***	***Consequence***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Hydrocarbon release from platform well to the marine environment and atmosphere		✓	✓	✓	✓	✓	✓	B	B	1	M	LCS GP PJ RBA CV SV	Acceptable if ALARP	**EPO 14**
Hydrocarbon release from subsea equipment to the marine environment and atmosphere			✓	✓		✓		B	B	1	M			
Hydrocarbon release from topsides equipment to the marine environment and atmosphere		✓	✓	✓	✓	✓	✓	B	C	1	M			
Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of NRC.		✓	✓	✓	✓	✓	✓	B	B	1	M			

Description of Source of Risk

Extreme environmental conditions or other causes which result in an exceedance of the design criteria and a catastrophic failure of the facility and individual equipment (e.g., cranes, flare tower, etc.) has been identified as a potential MEE (MEE-04). Catastrophic structural failure of the NRC could lead to the release of hydrocarbons from platform wells, topsides process and non-process hydrocarbon inventories, and pipeline inventories. A platform collapse includes the potential risk of the release of inventory above the SSSV for each platform well, riser inventory above SSIV and topsides inventories.

The following causes of structural failure of NRC were identified:

- Internal corrosion (e.g. of caissons);
- External Corrosion;
- Fatigue;
- Impact from a vessel collision (refer to MEE-05, **Section 6.7.7**);
- Extreme weather (cyclone, high waves);
- Seismic events / seabed instability; and
- Fire / Overpressure event.

There is a possibility of platform collapse ('slow' or 'rapid') caused by the extreme loads induced by strong winds and extreme waves. Extreme weather may induce fracture of pipework due to vibration/fatigue and loosen/dislodge objects/projectiles causing impact to equipment/pipework and subsequently result in a loss of containment.

Structural damage to the platform resulting from the causes listed above could be minor or could in the most extreme situation result in total loss of the platform. The type of structural failure considered is restricted to major structural damage e.g. catastrophic collapse of the jacket or release of hydrocarbons on or adjacent to the platform. Such events are, by definition, beyond the design basis for the platform. Structural damage can affect any area of the platform.

Loss of Structural Integrity – Credible Hydrocarbon Spill Scenario

A loss of structural integrity could result in a significant release of hydrocarbons. Hydrocarbon releases may result in a spill to the marine environment, as described in:

- Well Loss of Containment (MEE-01 **Section 6.7.3**)
- Subsea Loss of Containment (MEE-02 **Section 6.7.4**)
- Topsides Loss of Containment (MEE-03 **Section 6.7.5**)
- Loss of Marine Vessel Separation (MEE-05 **Section 6.7.7**)

Worst case hydrocarbon release scenarios for platform well loss of containment, subsea loss of containment, topsides loss of containment that could result from loss of structural integrity of the NRC facility are discussed in the relevant sections referenced above. Relevant trajectory modelling as applicable to these scenarios is also discussed in the above-mentioned sections.

Decision Type, Risk Analysis and ALARP Tools

Woodside has a good history of implementing industry standard practice in structural design and construction. The NRC has never experienced a worst-case loss of containment due to structural failure in its operational history.

Decision Type

Decision Type B has been applied to this risk under the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk-based tools including the bowtie methodology (described in **Section 2**) and hydrocarbon spill trajectory modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and consultation.

The loss of structural integrity is considered a Major Environment Event (MEE-04). The hazards associated with this MEE is hydrocarbons in platform wells, pipelines, process and non-process inventories and potentially vessels, wellheads, and the NRC structure itself.

Quantitative Spill Risk Assessment

Credible worst-case stochastic spill modelling for the scenarios associated with MEE-01, MEE-02, and MEE-03 are considered to apply to a loss of structural integrity MEE-04 (**Section 6.7.4**) has been undertaken. Refer to **Section 6.7.3 6.7.4,** and **6.7.5**

Likelihood

In accordance with the Woodside Risk Matrix (**Section 2.6.3**), the following likelihoods have been assigned to the sources of risk:

- Hydrocarbon release from platform well to the marine environment and atmosphere / Hydrocarbon release from topsides equipment to the marine environment and atmosphere (MEE-01): Highly Unlikely (refer to **Section 6.7.2**).
- Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of NRC (MEE-03): Highly Unlikely (**Section 6.7.5**)

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon and the potential seabed disturbance footprint from the NRC were considered during the impact assessment for a worst-case loss of structural integrity. These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by, RPS, available information on environmental sensitivities (**Section 4**) that may credibly be impacted in the event of a worst-case spill (**Section 6.7.2**), and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence Assessment

Environment that May Be Affected

As discussed above, the potential impacts from a hydrocarbon release caused by a loss of vessel separation include those which would result from:

- well loss of containment (MEE-01; **Section 6.7.3**)
- subsea equipment loss of containment (MEE-02; **Section 6.7.4**)
- topsides loss of containment (MEE-03; **Section 6.7.5**); and
- loss of marine vessel separation (MEE-05; **Section 6.7.7**).

The potential impacts are therefore discussed in the above-mentioned sections.

Seabed disturbance

In the event of loss of structural integrity there is the potential for collapse of the platform leading to an incremental increase of the facility's footprint on the seabed. The potential area that would be affected can conservatively be defined as the existing NRC footprint plus 100 m in all directions, that is that is approximately 0.0245 km^2 for NRA ~125 m water depth by 196 m NRA platform height) approximately 0.0325 km^2 for NRB (125 m water depth by 260 m NRB platform height).The benthic habitats surrounding NRC have been subject to historical disturbance (e.g. NRC construction, discharge of drill cuttings) and are considered to be of low ecological value (although it is acknowledged that NRC provides artificial hard substrate, which has formed the basis of relatively high biodiversity communities when compared to the surrounding seabed). The physical disturbance to the seabed resulting from the collapse of NRC would be localised but result in long-term disturbance to benthic communities.

NRC could act as a potential source of environmental contaminants due to material onboard the platform (e.g. chemical / hydrocarbon inventories, corrosion of structural materials, debris etc.). The potential for contamination will diminish over time as the structure degrades. Depending on the nature of the loss of structural integrity, complete or partial salvage of the NRC structures may not be feasible. Any structures not able to be recovered will be left on the seabed indefinitely. These structures are expected to be colonized by marine organisms, and a reef habitat will develop over time on the structures.

MEE-04 Loss of Marine Vessel Separation – Risk Analysis

A bowtie risk analysis was undertaken to assess MEE-04; refer to **Figure 6-24, Figure 6-25, Figure 6-26 and Figure 6-27** for bowtie diagrams which were an output of Woodside's risk analysis process.

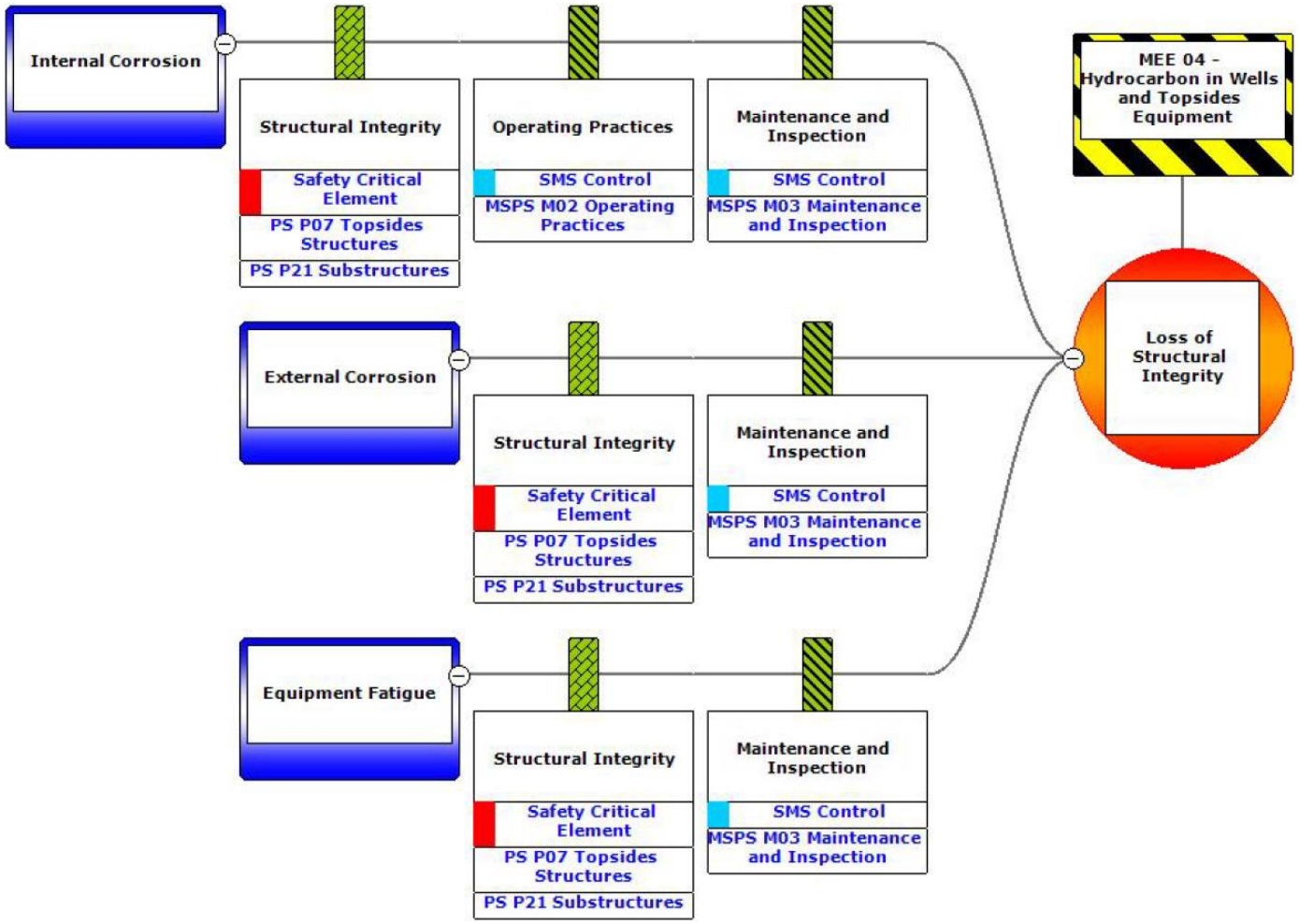


Figure 6-24: MEE-04 Loss of Structural Integrity (Causes 1 - 3)

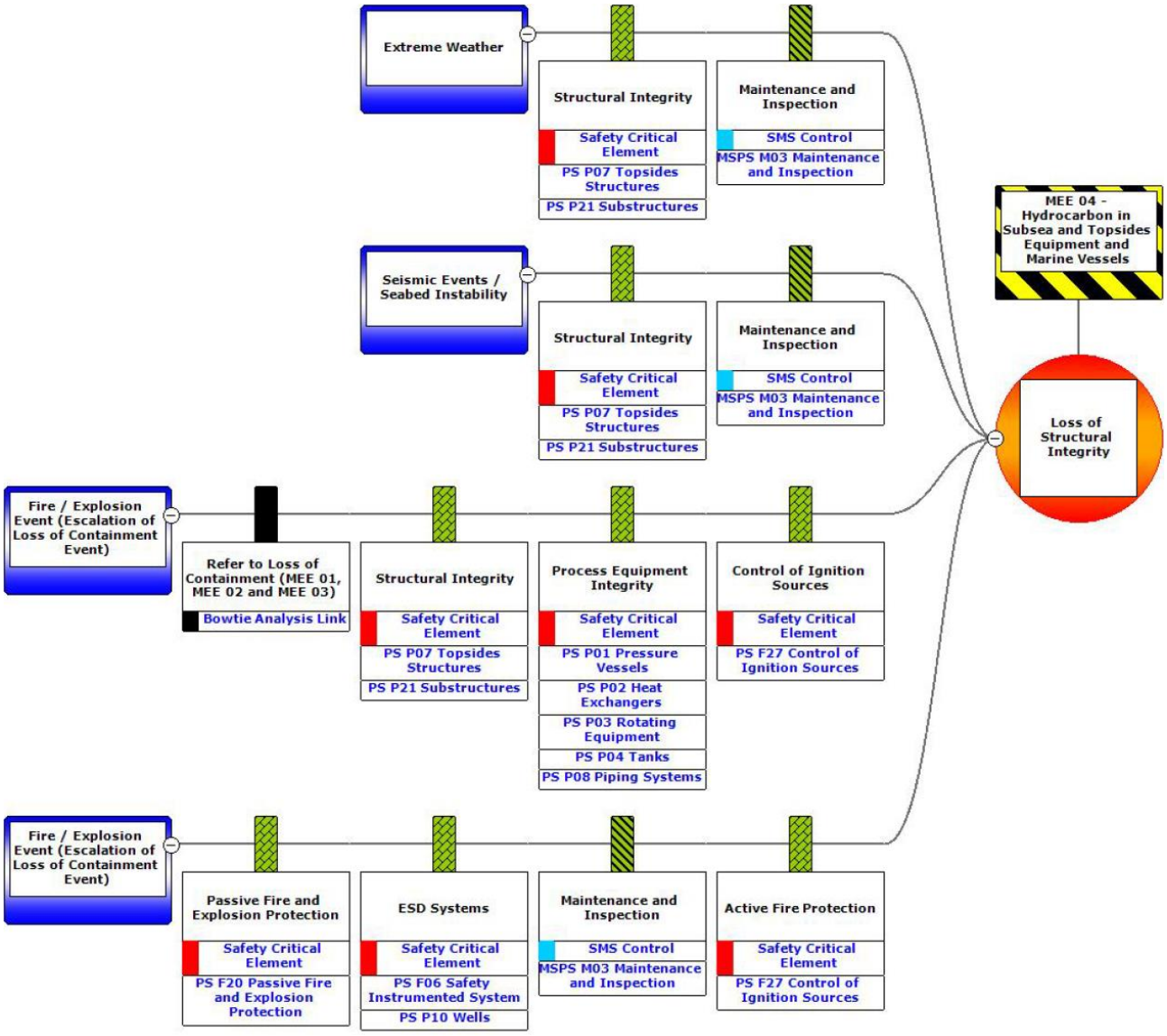


Figure 6-25: MEE-04 loss of vessel separation (Causes 4 - 7)

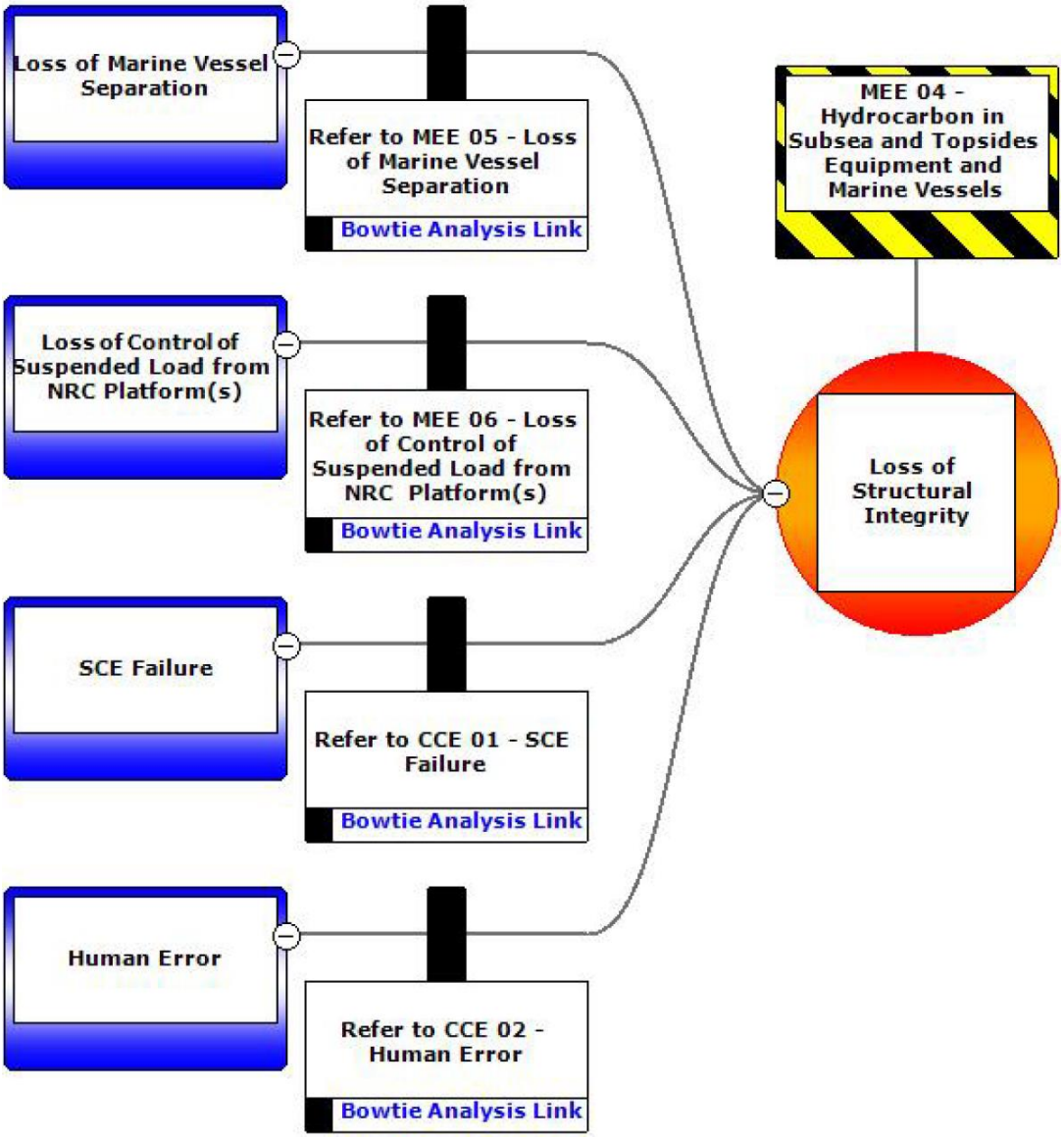


Figure 6-26: MEE-04 loss of vessel separation (Causes 8 - 11)

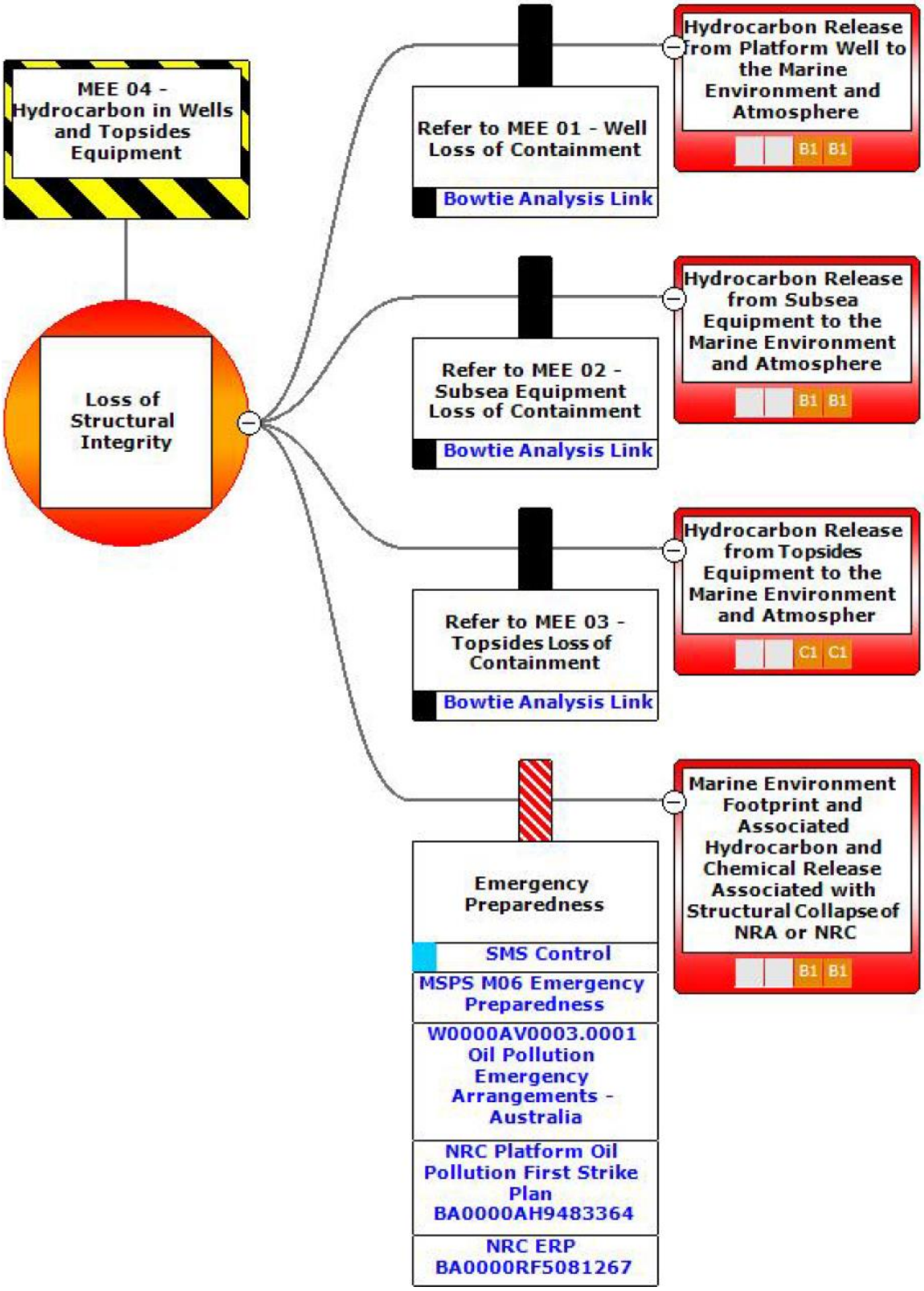


Figure 6-27 MEE-04 Loss of Structural Integrity (Outcomes)

MEE-04 Loss of Structural Integrity – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering Controls	Maintain structural integrity to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE.	P07 – Topsides / Surface Structures P21 – Substructures	Prevention (Technical)	Yes **C 14.1**
Engineering Controls	Maintain control of ignition sources and fire protection to prevent loss of structural integrity.	F27 – Control of Ignition Sources F14 – Fire Water System F20 – Passive Fire and Explosion Protection	Prevention (Technical)	Yes **C 14.2**
Mitigating Barrier – Safety and Environmental Critical Elements				
Emergency Response	Maintain environmental incident response equipment to enact the NRC First Strike Plan.	E05 – Environmental Incident Response Equipment	Mitigation (Technical)	Yes **C 11.5**
Legislation Codes and Standards				
Procedures and Administration	OPGGS (Resource Management and Administration) Regulations 2011: Accepted Well Operations Management Plan (WOMP) to demonstrate that the risks to well integrity are managed in accordance with sound engineering principles, standards, specifications, and good oilfield practice. It describes the systems in place to ensure well design and integrity is managed for the well lifecycle, thus contributing to management of associated potential environmental consequences of well integrity events.	North Rankin Hub Well Operations Management Plan.	Prevention/ Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.6**
	OPGGS (Safety) Regulations 2009: Accepted Safety Case for the facility to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks	NRC Safety Case	Prevention/ Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.7**

MEE-04 Loss of Structural Integrity – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
	• describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, thus contributing to management of associated potential environmental consequences of MAEs.			
Procedures and Administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure.	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 11.8**
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implementing management systems to maintain: • M02 Operating Practices • M03 Maintenance and Inspections	MSPS-02 Operating Practices MSPS-03 Maintenance and Inspections	Prevention (Administration)	Yes – See **Section 6.10** Implementation Strategy
Emergency Response and Contingency Planning	Implementing management systems to maintain: • M06 – Emergency preparedness • NRC Emergency Response Plan • NRC Operations Oil Pollution First Strike Plan • Oil Pollution Emergency Arrangements – Australia.	MSPS M06 – Emergency preparedness NRC Emergency Response Plan NRC Operations Oil Pollution First Strike Plan Oil Pollution Emergency Arrangements – Australia	Mitigation (Administration)	Yes Refer to **Section 7** for discussion around the ALARP assessment of controls related to hydrocarbon spill response

MEE-04 Loss of Structural Integrity – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
Risk Based Analysis				

For risks identified as MEEs, a detailed risk based bowtie analysis (as outlined in **Section 2.7.3**) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event.

Application of Woodside's Risk Management Procedures and implementation of the NRC and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures: and
- ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g., inspection, maintenance, testing and monitoring requirements) to ensure technical integrity.

A quantitative spill risk assessment was undertaken (refer **Section 6.7.2** for details of the method used).

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a remote likelihood unplanned hydrocarbon release as a result of a loss of structural integrity.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of pipeline and riser integrity and ensuring the systems are operated within their design envelope through operating practices and assurance through maintenance and inspection. If hydrocarbon loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the NRC Safety Case(s), SCE management procedures including technical performance standards for Safety Critical Elements (SCEs) and Management System Performance Standards (MSPS) for Safety Critical Procedures.

The application of Woodside Risk Management Procedures, and implementation of the NWS Pipelines and NRC Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- Ongoing hazard identification, risk assessment and the identification of control measures; and
- Ongoing integrity management of hardware control measures in accordance with SCE technical performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, it is considered that MEE risk associated with Loss of Structural Integrity at NRC is managed to ALARP.

MEE-04 Loss of Structural Integrity – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
Demonstration of Acceptability				
Acceptability Statement: Loss of structural integrity has been evaluated as having a 'moderate' level of risk rating. As per **Section 2**, Woodside considers 'moderate' risk ratings as broadly acceptable if the adopted controls are implemented. Due to the consequence associated with MEE-04, Decision Type B has been applied, and 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 6.7.3** (MEE-01). The considerations include principles of Ecological Sustainable Development and other requirements (including laws, policies, standards and conventions). On the basis of the environmental impact assessment outcomes and Woodside's criteria for acceptability outlined in **Section 2.8.2**, this is considered an acceptable level of risk.				

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 14 Woodside will manage its activities to prevent loss of structural integrity events which could cause material loss of containment to the marine environment. Structural integrity loss of containment risks to the environment are managed to limit risk to High[60] through maintenance of prevention and mitigative barriers during the Petroleum Activities Program.	**C 14.1** Maintain structural integrity to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE.	**PS 14.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P07 – Substructures • P21 – Topsides / Surface Structures to both; – provide and maintain structural integrity to support SCE systems under all design conditions through service life; and to; – prevent structural failure from contributing to the escalation of a MEE by providing support/protection of SCE systems during an emergency event, and/or support containment of environmentally hazardous	**MC 2.6.1** Refer to **Section 6.6.2**

[60] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
		material (including hazardous and closed drain caissons).	
	C 14.2 Maintaining control of ignition sources and fire protection to prevent loss of structural integrity.	**PS 14.2** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F27 – Control of Ignition Sources to: – prevent ignition of flammable or explosive atmospheres within identified Hazardous Areas. • F20 – Passive Fire and Explosion Protection to: – mitigate the effects of a fire or explosion by maintaining the integrity of critical structure and equipment and limiting the potential for escalation.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.5 Refer to **Section 6.7.3.**	**PS 11.5** Refer to **Section 6.7.3.**	**MC 2.6.1** Refer to **Section 6.6.2**
	C 14.3 Maintaining topsides hydrocarbon-containing infrastructure integrity.	**PS 14.3** Integrity will be managed in accordance with SCE Management Procedure and SCE Technical Performance Standard(s) to prevent environment risk related Damage to SCEs for: • P01 – Pressure Vessels • P02 – Heat Exchangers • P03 – Rotating Equipment • P04 – Tanks • P08 – Piping Systems, to together provide minimum required mechanical integrity for identified SCE systems (piping, heat exchangers, rotating equipment and pressure vessels) for operation within defined integrity limits to prevent a loss of containment that may result in an MEE.	**MC 2.6.1** Refer to **Section 6.6.2**

EPOs, EPSs and MCs For NRC Operations			
	C 11.4 Refer to **Section 6.7.3**	**PS 11.4** Refer to **Section 6.7.3**	**MC 2.6.1** Refer to **Section 6.7.3**
	C 11.6 OPGGS (Resource Management and Administration) Regulations 2011: Accepted WOMP. Refer to **Section 6.7.3**	**PS 11.6** An accepted WOMP is implemented, and well integrity notification and reporting are undertaken in accordance with the regulations (as applicable). Refer to **Section 6.7.3**	**MC 11.6.1** Acceptance letter from NOPSEMA demonstrates acceptance of the WOMP. Records demonstrate applicable NOPSEMA notification and reporting. Refer to **Section 6.7.3**
	C 11.7 Refer to **Section 6.7.3**	**PS 11.7** Refer to **Section 6.7.3**	**MC 11.7.1** Refer to **Section 6.7.3**
	C 11.8 Refer to **Section 6.7.3**	**PS 11.8** Refer to **Section 6.7.3**	**MC 11.8.1** Refer to **Section 6.7.3**

6.7.7 Unplanned Hydrocarbon Release: Loss of Marine Vessel Separation (MEE-05)

Context		
Pipeline and Riser System – **Section 3.5.3** Hydrocarbon and Chemical Inventories and Selection – **Section 3.10** Support Vessels -**Section 3.8**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Cultural and Heritage Values – **Section 4.9** Socio-economic– **Section 4.10**	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-economic***	***Decision Type***	***Consequence***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Hydrocarbon release from platform well to the marine environment and atmosphere		✓	✓	✓	✓	✓	✓	B	B	1	M	LCS GP PJ RBA	Acceptable if ALARP	**EPO 15**
Hydrocarbon release from subsea equipment near the NRC to the marine environment and atmosphere			✓	✓		✓		B	D	1	M			
Hydrocarbon release from topsides equipment to the marine environment and atmosphere		✓	✓	✓	✓	✓	✓	B	B	0	M			
Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of NRC.		✓	✓	✓	✓	✓	✓	B	D	1	M			

Description of Source of Risk

A loss of marine vessel separation between a vessel and the NRC may result in a loss of hydrocarbon containment from the NRC and / or the release of fuel from the vessel. A vessel collision with the NRC has been identified as a potential MEE (MEE-05). Vessel collisions can arise from:

- visiting vessel collisions associated with platform and subsea support vessels and accommodation vessels – ships which are visiting the riser platform can accidentally collide with the platform during approach to, or manoeuvring alongside, the platform
- errant passing vessel collision – ships which are not visiting the riser platform (i.e., passing vessels) can, for one reason or another, move off-course and collide with the platform
- vessel operations during adverse weather

The different collision hazards involve significantly different sized vessels and collision speeds; hence, differing impact energies and consequences have been assessed.

Visiting Vessels

Visiting vessels are defined as those which are routinely used to service the NRC which include platform support vessels, subsea support vessels and accommodation support vessels. Operating procedures dictate how vessels are operated, loaded and unloaded, but it will generally occur so that the prevailing winds move the vessel away from the facility. The primary causes of visiting vessel collisions are failure to follow safe procedures and communication errors between the marine vessels and riser platform operations. These errors could be worsened by:

- vessel station keeping failures
- vessel operations in adverse weather conditions.

A number of common failure causes due to human error and Safety Critical Equipment (SCE) failures are presented in the generic Human Error and SCE failure bowties in **Section 6.7.9**

Errant Passing Vessels

Errant passing vessels are defined as third party vessels that enter the riser platform's 500 m PSZ, but do not call at the facility (i.e., not support vessels). The collision can be powered or drifting. Either has the potential to cause significant damage to the riser platform.

The causes of errant passing vessel collisions include:

- failure of propulsion or steering systems
- adverse weather conditions resulting in poor visibility
- rough seas
- human error.

Woodside implements a range of control measures to mitigate the risk of errant vessel collision (**Section 6.6.1**).

In addition to the potential for large hydrocarbon releases following impact by a vessel with the NRC structure, powered collisions from large passing vessels or tankers could have sufficient impact energy to breach both skins of the vessel to the extent that there is a loss of containment of cargo or fuel oil with the potential for significant loss of inventory and consequent environmental impact.

Vessel Collision

A collision between a support vessel with a third-party vessel (i.e., commercial shipping, other petroleum related vessels and commercial fishing vessels) was considered the only credible event that could release a significant quantity of marine diesel to the environment, during operations. This was assessed as being credible, but highly unlikely, given:

- the platform support vessels typically operate in the PAA
- the presence of subsea vessels in the PAA is typically temporary (e.g., while undertaking IMMR activities)
- vessels undertaking the Petroleum Activities Program typically operate at low speeds or are stationary
- the standard vessel operations and equipment in place to prevent collision at sea
- the construction and placement of storage tanks.

Typically, the MEE register associated with operations sits with the asset and aligns with the asset safety case to ensure appropriate coverage and risk management for the duration of facility operations.

The largest tank of a platform support vessel (**Section 3.8.1**) or subsea support vessel (**Section 3.8.2**) may range up to ~150 m^3. A review of previous modelling identified an instantaneous release of 105 m^3 of diesel at the NRC platforms that is considered representative of a loss of containment from a support vessel. Release characteristics for fuel tank loss of containment scenario are summarised in **Table 6-24**.

Table 6-24: Summary of worst-case support vessel fuel tank loss of containment during operations scenario

Scenario	Hydrocarbon	Duration (minutes)	Depth (m)	Platform	Latitude	Longitude	Total hydrocarbon release volume (m^3)
Support vessel fuel tank loss of containment	Marine Diesel	< 10	Surface	NRA Platform	19° 35' 03.23"S	116° 08' 17.06'E	440 m^3
				NRB Platform	19° 35' 02.52"S	116° 08' 11.32'E	

Loss of Vessel Separation – Credible Hydrocarbon Spill Scenario

The loss of marine vessel separation is considered a Major Environment Event (MEE-05). The hazards associated with this MEE are loss of containment of hydrocarbons in subsea equipment, process and non-process inventories and potentially vessels, and fuel onboard platform support vessels. A loss of marine vessel separation could result in a significant release of hydrocarbons and credible spill scenarios consistent with:

- Well Loss of Containment (MEE-01)
- Subsea Loss of Containment (MEE-02)
- Topsides Loss of Containment (MEE-03)
- Loss of Structural Integrity (MEE-04)

In addition, vessel cargo, including diesel inventory, could be spilled if the cause of the loss of platform integrity was a collision from a support vessel.

Worst-case hydrocarbon release scenarios for well loss of containment (MEE-01) and subsea equipment loss of containment (MEE-02) that could result from loss of marine vessel separation are discussed in the relevant sections referenced above. Relevant trajectory modelling, as applicable to these scenarios, is also discussed above.

A loss of vessel separation may lead to the accidental release of marine diesel from the fuel tanks on the vessel(s) involved. For a vessel collision to result in the worst-case scenario of a hydrocarbon spill potentially impacting an environmental receptor, several factors must align as follows:

- Vessel interaction must result in a collision.
- The collision must have enough force to penetrate the vessel hull.
- The collision must be in the exact location of the fuel tank.
- The fuel tank must be full, or at least of volume which is higher than the point of penetration.

The probability of the chain of events described above aligning, to result in a breach of fuel tanks resulting in a spill that could potentially affect the marine environment is considered highly unlikely. Given the offshore location of the Offshore Facility Operational Area, vessel grounding in relation to the Petroleum Activities Program is not considered a credible risk.

The probability of the chain of events described above aligning, to result in a breach of fuel tanks resulting in a spill that could potentially affect the marine environment is considered highly unlikely. Given the offshore location of the Offshore Facility Operational Area, vessel grounding in relation to the Petroleum Activities Program is not considered a credible risk.

A collision between a platform, subsea support vessel, or ASV with a third party vessel (i.e. commercial shipping, other petroleum related vessels and commercial fishing vessels) was considered the only credible event that could release a significant quantity of marine diesel to the environment. This was assessed as being credible but highly unlikely given the platform support vessels typically operate in the Offshore Facility Operational Area, the presence of subsea vessels in the PAA is typically temporary (e.g. while undertaking IMMR activities), vessels undertaking the Petroleum Activities Program typically operate of low speeds or are stationary, the standard vessel operations and equipment in place to prevent collision at sea, and the construction and placement of storage tanks. The largest tank of a platform support or subsea support vessel is unlikely to exceed 105 m^3. However, an ASV may have in the order of 1,000 m^3 in an individual tank. Therefore, for the purposes of understanding the characteristics of a marine diesel release from an ASV, an instantaneous loss of 1,000 m^3 has been selected as being representative of a worst-case spill scenario. Modelling of a 1,000 m^3 was undertaken for the Pluto platform and used as a surrogate for a spill at the NRC location. The marine diesel modelling conducted for Pluto Operations is a conservative surrogate scenario that can be used for NRC (RPS, 2024b). The modelling conducted for Pluto Operations has been used as it is more

conservative in size, closer to sensitive receptors (Montebello Islands), and is likely to have similar metocean conditions due to the Pluto's proximity to NRC (83 km south-west).

Decision Type, Risk Analysis and ALARP Tools

Woodside has not experienced any loss of marine vessel separation events that have resulted in significant environmental impacts. The facility has never experienced a worst-case loss of containment due to loss of vessel separation in its operational history.

Decision Type

Decision Type B has been applied to this risk under the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk-based tools including the bowtie methodology (described in **Section 6.7.9**) and hydrocarbon spill trajectory modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and consultation.

Quantitative Spill Risk Assessment

Stochastic modelling of the worst-case credible hydrocarbon spill of the support vessel tank loss of containment was undertaken by RPS, to determine the fate of hydrocarbons released based on the assumptions in **Section 6.7.2**. The support vessel worst case loss of containment scenario modelling for Pluto Operations is a conservative surrogate scenario that can be used for NRC due to facility proximity and EMBA of this type of spill. Modelling was undertaken over all seasons to address year-round operations. This is considered to provide a conservative estimate of the EMBA and the potential impacts from the identified worst-case credible release volumes for all loss of well containment scenarios.

Likelihood

In accordance with the Woodside Risk Matrix (**Section 2.6.3**), the following likelihoods have been assigned to the sources of risk:

- release of hydrocarbons resulting from loss of export pipeline containment (AEP including 1TL inventory) (MEE-02): Highly Unlikely (refer to **Section 6.7.4**)
- release of hydrocarbons resulting from loss of containment of subsea flowlines and infrastructure (MEE-02): Highly Unlikely (refer to **Section 6.7.4**)
- hydrocarbon release from topsides equipment to the marine environment and atmosphere: Highly Unlikely (refer to **Section 6.7.5**)
- marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of riser platform (MEE-04): Remote (refer to **Section 6.7.6**)
- surface release from support vessel fuel tank: Highly Unlikely.

Consequence

The spatial extent and fate (incl. weathering) of the spilled hydrocarbon from the NRC and platform support vessels were considered during the impact assessment for a worst-case loss of marine vessel separation. These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (**Section 6.7.2**), and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence Assessment

Environment that May Be Affected

As discussed above, the potential impacts from a hydrocarbon release caused by a loss of vessel separation include those which would result from:

- Well Loss of Containment (MEE-01)
- Subsea Loss of Containment (MEE-02)
- Topsides Loss of Containment (MEE-03)
- Loss of Structural Integrity (MEE-04)

The marine diesel spill would be highly localised with minor and short-term impacts to receptors within the EMBA. Impacts to water quality and air quality in the immediate location of the spill would be expected to be minor and short-term. The potential impacts are therefore discussed in the above-mentioned sections.

Marine Diesel

Surface Hydrocarbons

The hydrocarbon spill modelling indicated that concentrations of floating hydrocarbons equal to or greater than the 10 g/m^2 threshold could potentially be found, in the form of slicks, up to 50 km north and north-east from the release location. Receptors with the highest probability of contact at the ecological threshold include Montebello AMP with a 24% probability.

Entrained Hydrocarbons

Entrained oil concentrations equal to or greater than the 100 ppb threshold are predicted to be found up to 400 km south-west from the release location.

Receptors with the highest probability of contact at the ecological threshold (>100 ppb) include Gascoyne AMP (4%), Montebello AMP (57.5%) and Tryal Rocks (1.5%). Several other sensitive receptors are predicted to be contacted at concentrations equal to or greater than 100 ppb with probabilities of 0.5-2% (Table 6 50).

Dissolved Hydrocarbons

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 26 km south-west from the release location. Receptors with the highest probability of contact at the ecological threshold (>50 ppb) include Montebello AMP (19.5%).

Accumulated Hydrocarbons

The modelling predicted no shoreline hydrocarbon accumulated at any receptor above the ecological threshold (RPS 2024b).

Summary of Potential Impacts to Environmental Value(s)

The modelling conducted for a loss of marine vessel separation at the Pluto Riser Platform provides conservative insight into the consequences of a similar release at NRC. The extent of impacts does not exceed the EMBA defined by the work case release from NRC, which is the well loss of containment (MEE-01). Receptors that may be impacted by the MEE-05 spill scenario are listed within the broader list of receptors for MEE-01, presented in **Table 6-18.** Potential impacts of a hydrocarbon spill to the open water environment and receptors have been assessed within the worst-case spill scenario, MEE-01; refer to **Section 6.7.3** for a description of potential impacts.

The marine diesel spill would be highly localised with minor short-term impacts to receptors within the EMBA anticipated. Impacts to water quality and air quality in the immediate location of the spill would be expected to be minor and short-term.

MEE-05 Loss of Marine Vessel Separation – Risk Analysis

A bowtie risk analysis was undertaken to assess MEE-05; refer to **Figure 6-28, Figure 6-29** and **Figure 6-30** for bowtie diagrams which were an output of Woodside's risk analysis process.

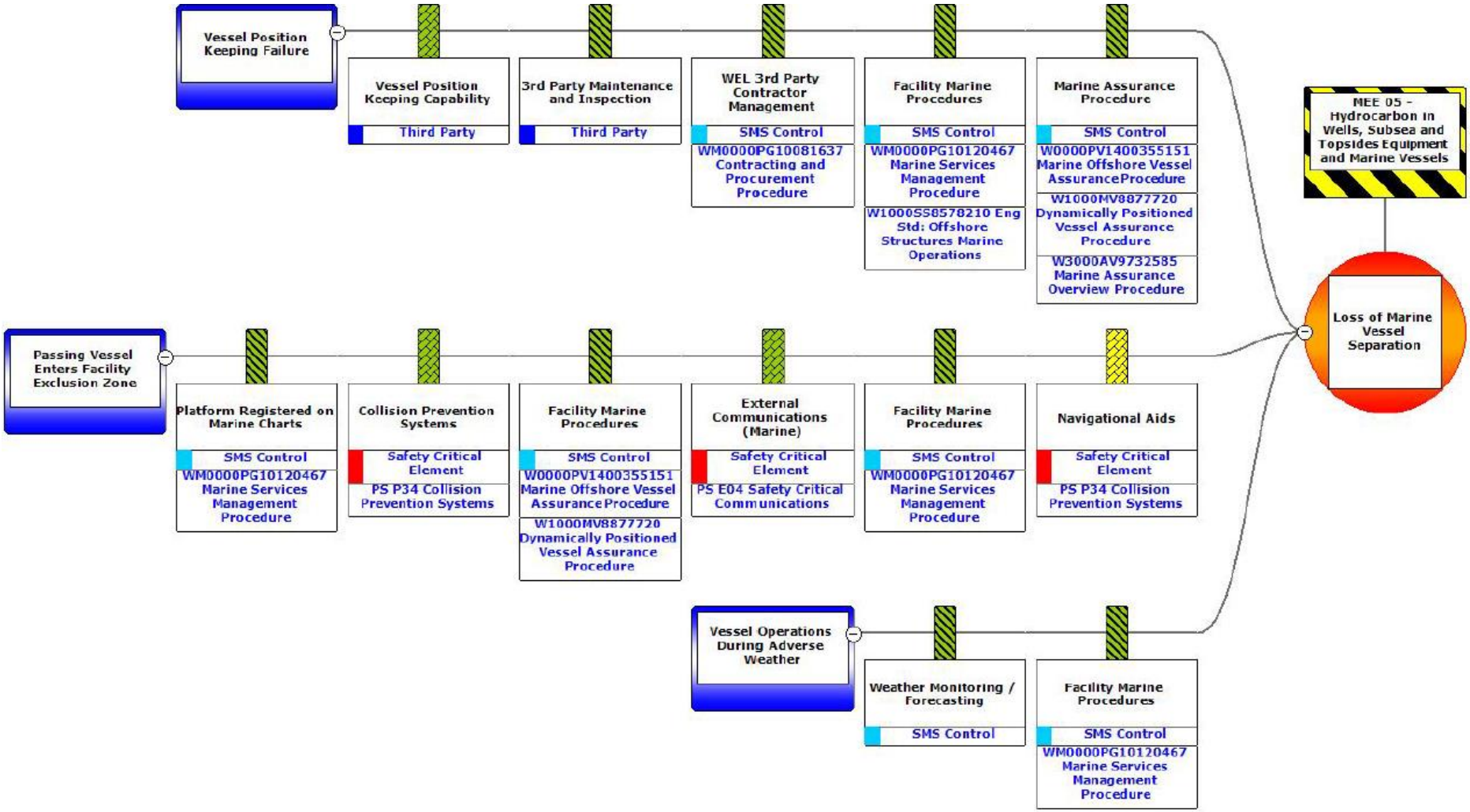


Figure 6-28: MEE-05 Loss of Marine Vessel Separation (Causes 1 – 3)

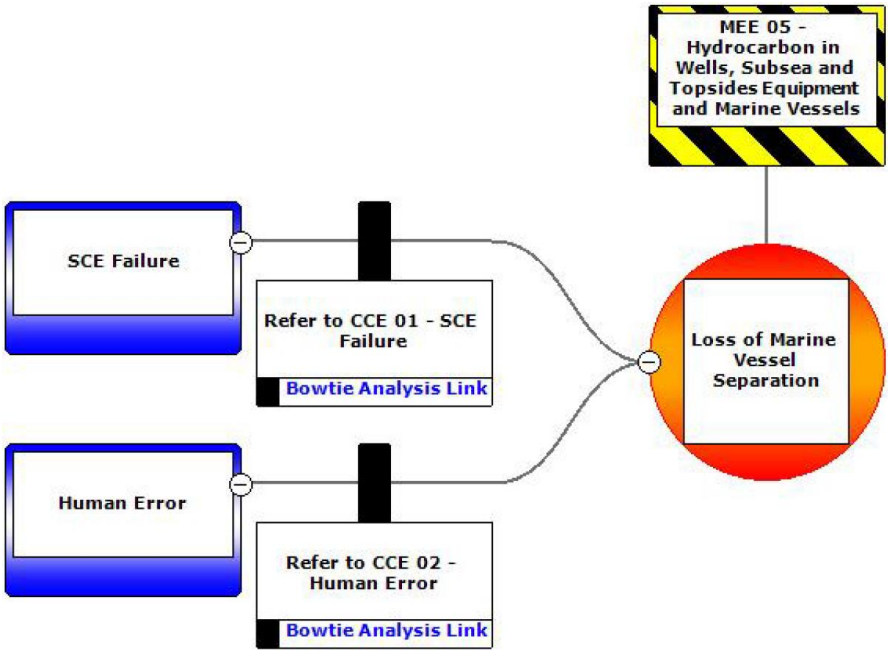


Figure 6-29: MEE-05 Loss of Marine Vessel Separation (Causes 4 – 5)

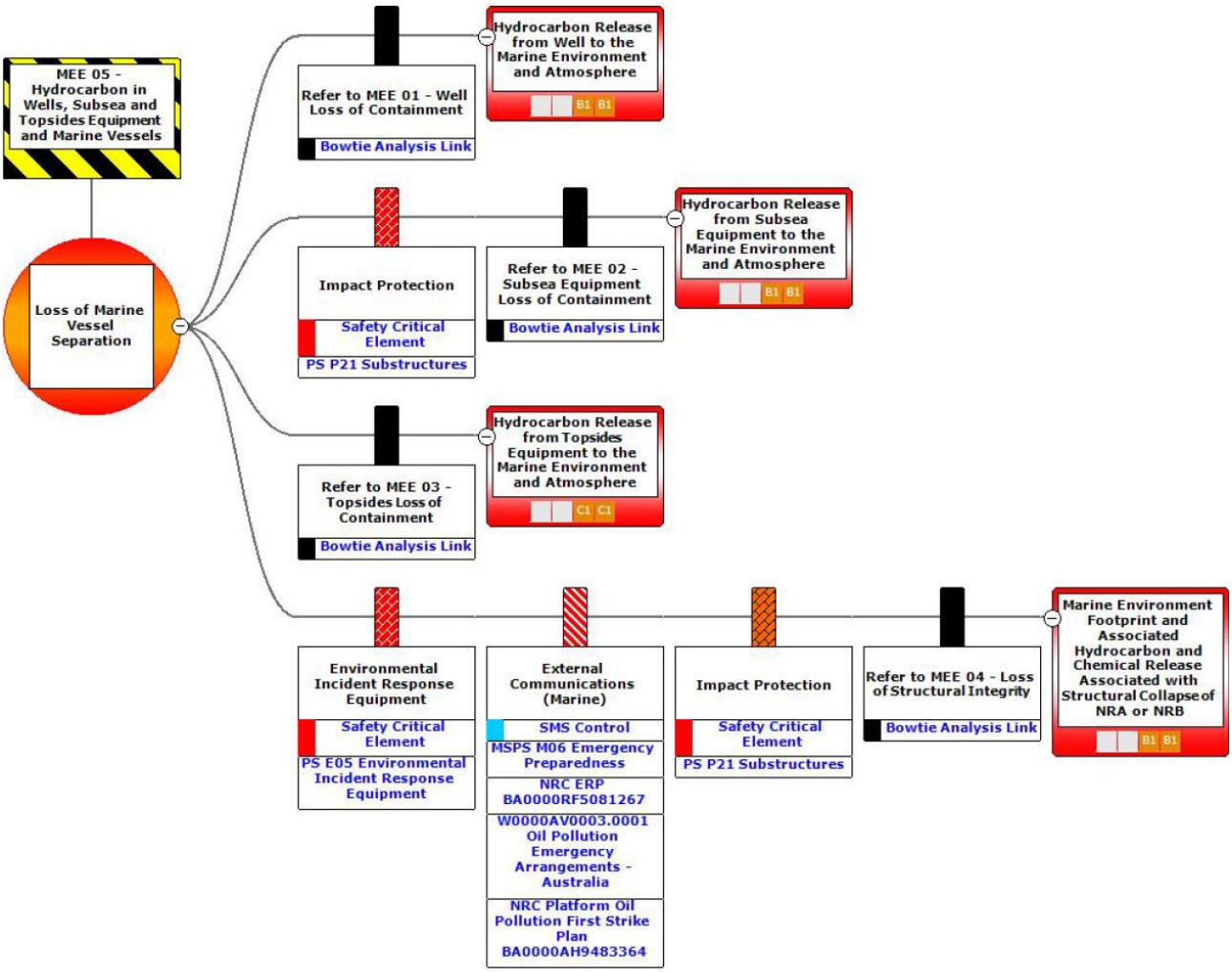


Figure 6-30: MEE-05 Loss of Marine Vessel Separation (Outcomes)

MEE-05 Loss of Marine Vessel Separation – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering Controls	Maintaining collision warning systems and navigational aids to alert facility of a potential collision with marine vessels, and to alert marine vessels of facility location so they may take timely action to avoid the facility and hence reduce likelihood of collision.	P34 – Collision prevention systems	Detection (Technical)	Yes **C 15.1**
Engineering Controls	Maintaining availability of critical external and internal communication systems to facilitate prevention and response to accidents and emergencies.	E04 – Safety critical communication systems	Detection (Technical)	Yes **C 11.2**
Mitigating Barrier – Safety and Environmental Critical Elements				
Emergency Response	Maintaining environmental incident response equipment to implement initial response to enact the NRC Operations Oil Pollution First Strike Plan.	E05 – Environmental incident response equipment	Mitigation (Technical)	Yes **C 11.5**
Engineering Controls	Maintaining fire and gas detection and alarm systems on the facility to facilitate prevention and response to fire or gas hazards.	F01 – Fire and Gas Detection and Alarm Systems	Detection (Technical)	Yes **C 11.3**
Engineering Controls (per MEE 002)	Maintain Safety Instrumented Systems (e.g. ESD and safety instrumented functions) system, Blowdown and Open Hazardous Drains system to isolate, remove and control hazardous inventories so as to mitigate the effects of a MEE/ prevent escalation to a MEE.	F06 – Safety Instrumented System F09 – Depressurisation (Blowdown) to; F22 – Open Hazardous Drains	Reduction/Control (Technical)	Yes **C 14.3**
Impact Protection	Maintaining structural integrity to ensure availability of critical systems during a major accident or environment event, and prevent structural failures from contributing to escalation of an MEE.	P07 – Topsides/surface structures P21 – Substructures	Mitigation (Technical)	Yes **C 15.2**

MEE-05 Loss of Marine Vessel Separation – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
Legislation Codes and Standards				
Procedures and Administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the NRC to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, thus contributing to management of associated potential environmental consequences of MAEs.	NRC Safety Case	Prevention/ Mitigation (Administration)	Yes **C 11.7**
Procedures and Administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 11.8**
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implementing management systems to maintain: • Marine Services Management Procedure • Marine Assurance Overview Procedure • Contracting and Procurement Procedure.	Marine Services Management Procedure Marine Assurance Overview Procedure Contracting and Procurement Procedure	Prevention (Administration)	Yes – See **Section 6.10** Implementation Strategy

MEE-05 Loss of Marine Vessel Separation – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
Emergency Response and Contingency Planning	Implementing management systems to maintain: • M06 – Emergency preparedness • NRC Emergency Response Plan • NRC Operations Oil Pollution First Strike Plan • Oil Pollution Emergency Arrangements – Australia.	MSPS M06 – Emergency preparedness NRC Emergency Response Plan NRC Operations Oil Pollution First Strike Plan Oil Pollution Emergency Arrangements – Australia	Mitigation (Administration)	Yes See **Section 6.10** Implementation Strategy Refer to **Section 7** for discussion around the ALARP assessment of controls related to hydrocarbon spill response
Risk Based Analysis				
For risks identified as MEEs, a detailed risk based bowtie analysis (as outlined in **Section 2.7.3**) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event. Application of Woodside's Risk Management Procedures and implementation of the NRC and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: ongoing hazard identification, risk assessment and the identification of control measures ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability. For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g., inspection, maintenance, testing and monitoring requirements) to ensure technical integrity. A quantitative spill risk assessment was undertaken (refer **Section 6.7.2** for details of the method used).				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood of a loss of marine vessel separation. The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of the facility, ensuring the equipment is operated within the design envelope through operating practices, and assurance through maintenance and inspection. If a loss of marine vessel separation occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation. The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the NRC and NWS Pipelines Safety Cases, SCE management procedures including performance standards for SCEs and MSPSs for Safety Critical Management System Controls. The application of Woodside Risk Management Procedures and implementation of the NRC and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP. Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of facility operations, it is considered that MEE risk associated with a loss of marine vessel separation is managed to ALARP.				

MEE-05 Loss of Marine Vessel Separation – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control / Barrier***	***SCE / Management System Reference***	***Type of Effect (Refer to Table 6-14)***	***Control Adopted***
Demonstration of Acceptability				
Acceptability Statement: A loss of marine vessel separation during operations has been evaluated as having 'moderate' (B0 to D1) risk rating (via the consideration of applicable MEEs). As per **Section 2.6.3**, Woodside considers 'moderate' (B0) risk ratings as acceptable if managed to ALARP. Due to the consequence associated with MEE-05, Decision Type B has been applied; ALARP is 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. Acceptability is demonstrated with regard to the considerations described in **Section 6.7.3** (MEE-01). The considerations include principles of Ecological Sustainable Development and other requirements (including laws, policies, standards and conventions). On the basis of the environmental impact assessment outcomes and Woodside's criteria for acceptability outlined in **Section 2.8.2**, this is considered an acceptable level of risk.				

EPOs, EPSs and MCs For NRC Complex Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 15 Woodside will manage its activities to prevent loss of marine vessel separation events from resulting in material loss of containment to the marine environment. Structural integrity loss of containment risks to the environment are managed to limit risk to High[61] during the Petroleum Activities Program.	**C 15.1** Maintaining collision warning systems and navigational aids to alert facility of a potential collision with marine vessels, and to alert marine vessels of facility location so they may take timely action to avoid the facility and hence reduce likelihood of collision.	**PS 15.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P34 – Collision prevention systems, to: – alert facility of a potential collision with marine vessels – alert marine vessels of facility location so they may take timely action to avoid the facility and hence reduce likelihood of collision.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.2 Refer to **Section 6.7.2**.	**PS 11.2** Refer to **Section 6.7.2**.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.5 Refer to **Section 6.7.2**.	**PS 11.5** Refer to **Section 6.7.2**.	**MC 2.6.1** Refer to **Section 6.6.2**

[61] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Complex Operations			
	C 15.2 Maintaining structural integrity to ensure availability of critical systems during a major accident or environment event, and prevent structural failures from contributing to escalation of an MEE.	**PS 15.2** Integrity will be managed in accordance with SCE Management Procedure and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P21 – Substructures • P07 – Topsides/Surface Structures, to together: – provide and maintain structural integrity to support SCE systems under all design conditions through service life prevent structural failure from contributing to the escalation of an MEE by providing support/ protection of SCE systems during an emergency event, and/or support containment of environmentally hazardous material.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 11.3 Refer to **Section 6.7.2**.	**PS 11.3** Refer to **Section 6.7.2**.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 14.3 Maintain Safety Instrumented Systems (e.g., emergency shutdown and safety instrumented functions) system, blowdown and open hazardous drains system to isolate, remove and control hazardous inventories so as to mitigate the effects of an MEE/prevent escalation to a MEE.	**PS 14.3** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE technical Performance Standard(s) to prevent environment risk related Damage to SCEs for: • F06 – Safety Instrumented System, to: – detect and respond to pre-defined initiating conditions, and initiate responses that function to put the process plant, equipment, and the wells in a safe condition through appropriate isolation of hazardous inventories so as to prevent or mitigate the effects of a MEE.	**MC 2.6.1** Refer to **Section 6.6.2**

EPOs, EPSs and MCs For NRC Complex Operations			
		• F09 – Depressurisation (Blowdown), to: – safely depressurise the installation in order to avoid, or minimise the escalation of an uncontrolled loss of containment. • F22 – Open Hazardous Drains, to: – prevent escalation of an incident following loss of containment, fire and/or explosion by removing or containing flammable liquid from hazardous areas – support appropriate containment and disposal of environmentally hazardous liquids to avoid damage to the environment.	
	.**C 11.8** Refer to **Section 6.7.3**	**PS 11.8** Refer to **Section 6.7.3**	**MC 11.8.1** Refer to **Section 6.7.3**
	Mitigation – hydrocarbon spill response	Refer to **Appendix D:** Oil Spill Preparedness and Response Mitigation Assessment for discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

6.7.8 Unplanned Hydrocarbon Release: Loss of Control of Suspended Load from NRC Platform(s) (MEE-06)

Context		
Lifting Operations – **Section 3.7.8** Support Vessels -**Section 3.8**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Cultural Values and Heritage – **Section 4.9** Socio-economic– **Section 4.10**	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-economic*	*Decision Type*	*Consequence*	*Likelihood*	*Risk Rating*	*ALARP Tool*	*Acceptability*	*Outcome*
Hydrocarbon release from subsea equipment to the marine environment and atmosphere.		✓	✓	✓	✓	✓	✓	B	B	1	M	LCS GP PJ RBA CV SV	Acceptable if ALARP	**EPO 16**
Hydrocarbon release from topsides equipment to the marine environment and atmosphere.			✓	✓	✓	✓	✓	B	C	1	M			

Description of Source of Risk

Lifting activities on the NRC can take place on NRA or NRB from one of a number of platform cranes between supply vessels and laydown areas or between laydown areas. There are three cranes on NRA and two on NRB.

The sources of hazard associated with MEE-06 are lifting operations performed using the NRA, NRB or visiting vessel cranes that could potentially lead to dropped objects impacting assets (NRA, NRB, bridges, subsea infrastructures) inside the NRC PSZ.

Loss of suspended load has been identified as an MEE (MEE-06).

A loss of suspended load may arise from:

- lifting equipment failure
- incorrectly slung loads
- excessive loads.
- crane operator error; dropped anchor/object from supply/standby or work vessel
- adverse weather conditions.

A number of common failure causes due to human error and SCC failures are presented in the generic Human Error and SCE Failure bowties in **Section 6.7.9**.

Loss of Control of Suspended Load – Credible Scenarios

The potential outcome of a loss of control of a suspended load is a topsides and/or subsea flowlines and riser loss of containment. Refer to **Section 6.7.4** (MEE-02) and **Section 6.7.5** (MEE-03) for a description of subsea and topsides loss of containments scenarios, respectively.

Decision Type, Risk Analysis and ALARP Tools

Woodside has a good history of implementing industry standard practice in subsea system design and construction. In the company's recent history, it has not experienced any loss of suspended load events that have resulted in significant releases or significant environmental impacts.

Decision Type

Decision Type B has been applied to this risk under the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk-based tools including the bowtie methodology (described in **Section 2.7.3**) and hydrocarbon spill trajectory modelling. Company values were also considered in the demonstration of ALARP and acceptability through peer review, benchmarking and consultation.

A loss of control of a suspended load is considered an MEE (MEE-06). The hazard associated with this MEE is the hydrocarbon inventory of flowlines and risers, or topsides process and non-process hydrocarbons.

Quantitative Spill Risk Assessment

The credible worst-case hydrocarbon scenario for (MEE-02) and (MEE-03) is considered to apply to a loss of control of suspended load, as they may credibly arise from damage to hydrocarbon containing subsea infrastructure within the 500 m PSZ. Refer to **Section 6.7.2** for additional information on quantitative spill risk assessments for this scenario. A quantitative spill risk assessment was not conducted for the topsides loss of containment scenario due to the relatively small credible release volume; refer to **Section 6.7.7** for additional information.

Likelihood

In accordance with the Woodside Risk Matrix, given prevention and mitigation measures in place (i.e., design, inspection and maintenance), the likelihood assigned to the worst-case risk events are considered 1 (Highly Unlikely).

Consequence

The spatial extent and fate (incl. weathering) of the spilled hydrocarbons were considered during the impact assessment for a loss of control of suspended load. These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill, and relevant literature and studies considering the effects of hydrocarbon exposure. Refer to **Section 6.7.3** (MEE-01), **Section 6.7.4** (MEE-02) and **Section 6.7.5** (MEE-03) for a description of the consequence potentially resulting from subsea and topsides loss of containment scenarios, respectively.

MEE-05 Loss of Control of Suspended Load from Platform – Risk Analysis

A bowtie risk analysis was undertaken to assess MEE-06; refer to **Figure 6-31** and **Figure 6-33** for bowtie diagrams which were an output of Woodside's risk analysis process.

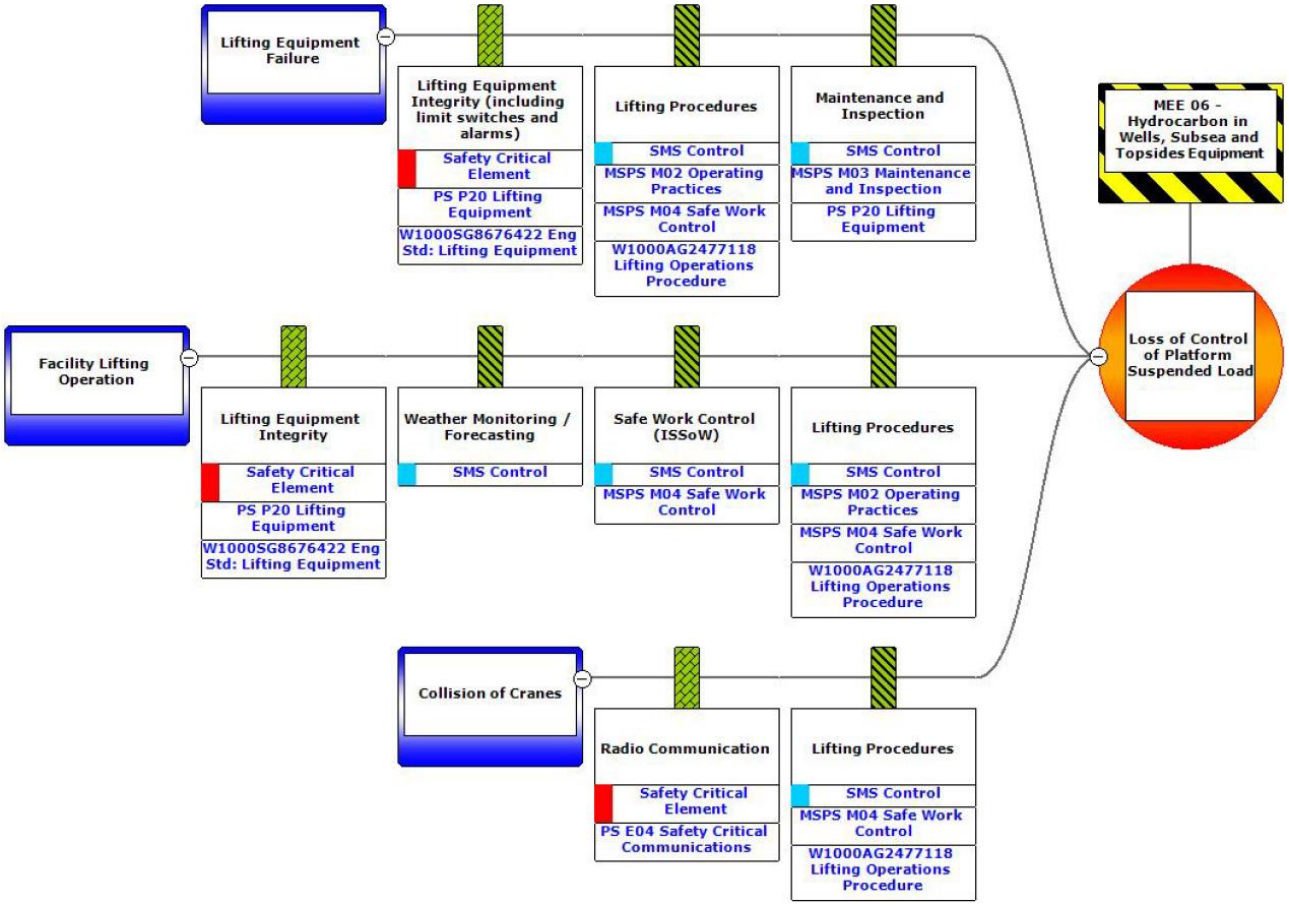


Figure 6-31: MEE-06 Loss of Control of Suspended Load from NRC Platform(s) Lifting Operations (Causes 1 - 3)

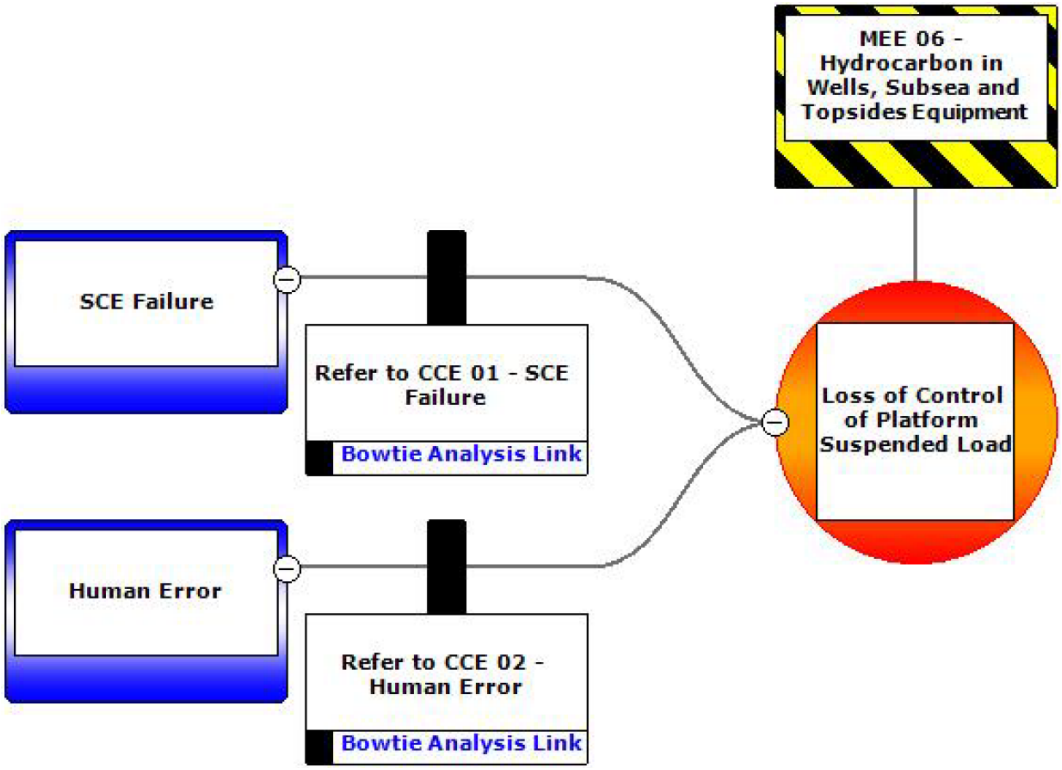


Figure 6-32: MEE-06 Loss of Control of Suspended Load from NRC Platform(s) Lifting Operations (Causes 4 - 5)

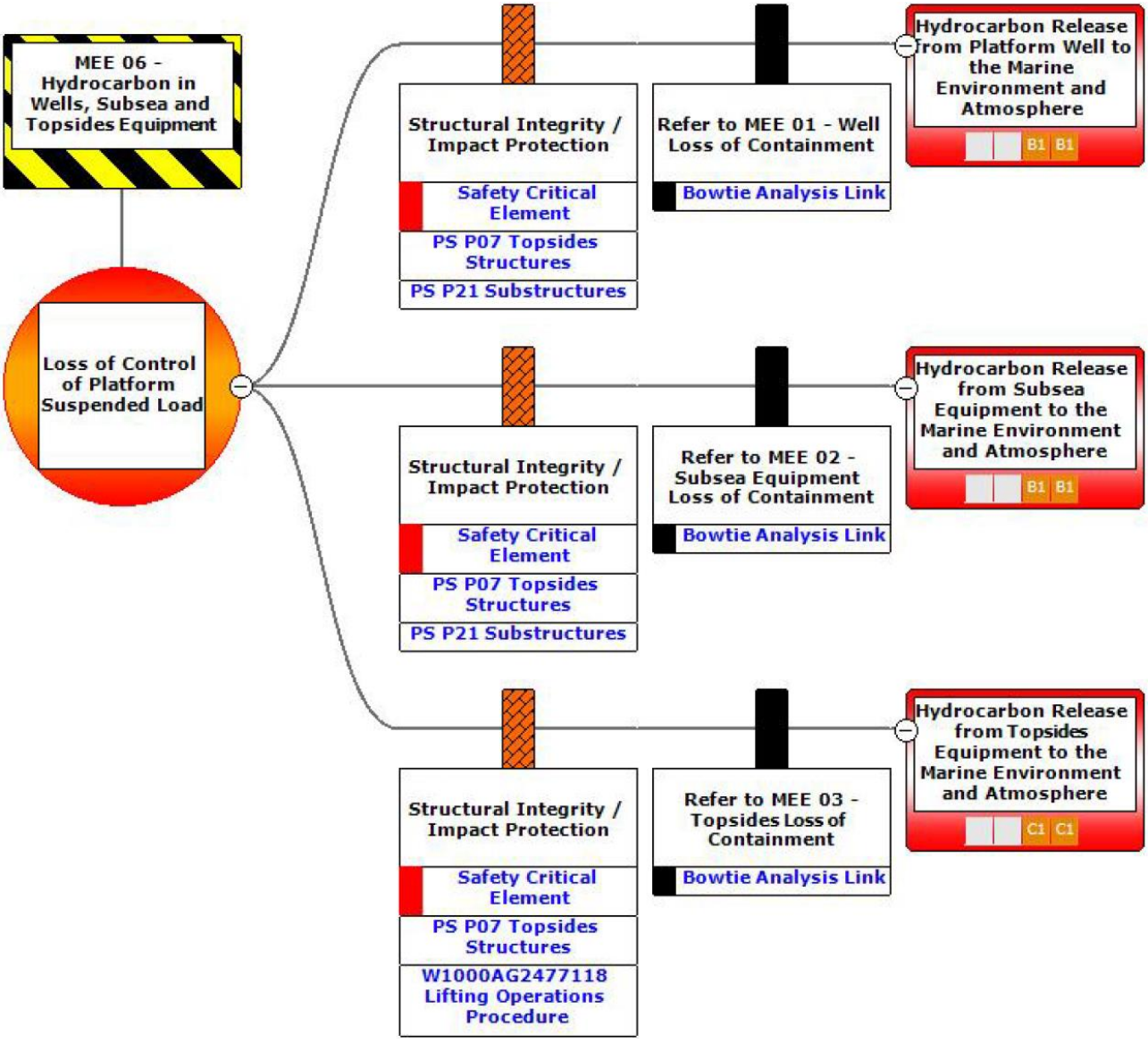


Figure 6-33: MEE-06 Loss of Control of Suspended Load from NRC Platform(s) Lifting Operations (Outcomes)

MEE-06 Loss of Control of Suspended Load from Platform – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering Controls	Maintaining platform lifting equipment to prevent platform lifting equipment failure or dropped/swinging loads that could result in an MEE.	P20 – Lifting equipment	Prevention (Technical)	Yes **C 16.1**
Mitigating Barrier – Safety and Environmental Critical Elements				
Impact Protection	Maintaining structural integrity to ensure availability of critical systems during a major accident or environment event, and prevent structural failures from contributing to escalation of an MEE.	P07 – Topsides/surface structures P21 – Substructures	Mitigation (Technical)	Yes **C 14.1**
Legislation Codes and Standards				
Procedures and Administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the NRC to; • identify hazards that have the potential to cause a MAE; • detail assessment of MAE risks; and • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with a MAE to ALARP; – thus, contributing to management of associated potential environmental consequences of MAEs.	NRC Operations Safety Case	Prevention / Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.7**
Procedures and Administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and	Prevention/Mitigation (Administration) Control based on Woodside standard	Yes **C 11.8**

MEE-06 Loss of Control of Suspended Load from Platform – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
		Investigation Procedure	and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implement management systems to maintain: • Engineering Standard – Lifting equipment • M03 – Maintenance and inspections • M04 – Safe work control • Procedures – Lifting Operations.	Engineering Standard Lifting Equipment MSPS M03 – Maintenance and inspections MSPS M04 – Safe work control Procedures – Lifting Operations	Mitigation (Administration)	Yes – See **Section 6.10** Implementation Strategy
Emergency Response and Contingency Planning	Implement management systems to maintain: • M06 – Emergency Preparedness • NRC Emergency Response Plan • NWS Pipelines Emergency Response Plan • NRC Operations Oil Pollution First Strike Plan • Oil Pollution Emergency Arrangements – Australia.	MSPS M06 – Emergency preparedness NRC Emergency Response Plan NWS Pipelines Emergency Response Plan NRC Operations Oil Pollution First Strike Plan Oil Pollution Emergency Arrangements – Australia	Mitigation (Administration)	Yes **C 11.7** **C 11.8** See **Section 6.10** Implementation Strategy Refer to **Appendix D** for discussion around the ALARP assessment of controls related to hydrocarbon spill response
Risk Based Analysis				
For risks identified as MEEs, a detailed risk based Bowtie Analysis (as outlined in **Section 2.7.3**) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event. Application of Woodside Risk Management Procedures, and implementation of the WOMP, NRC and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: • ongoing hazard identification, risk assessment and the identification of control measures				

MEE-06 Loss of Control of Suspended Load from Platform – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
• ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability. For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g., inspection, maintenance, testing and monitoring requirements) to ensure technical integrity. A bowtie analysis was undertaken to assess MEE-06, refer to **Figure 6-31** and **Figure 6-33** and for bowtie diagrams. A quantitative spill risk assessment was undertaken (refer **Section 6.7.2** for details of the method used).				
Company Values				
Refer to **Section 6.7.4** for a discussion of company values in relation to the pipeline and riser loss of containment scenario.				
Societal Values				
Refer to **Section 6.7.4** for a discussion of societal values in relation to the pipeline and riser loss of containment scenario.				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood of a loss of control of suspended loads. The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of the facility, ensuring the equipment is operated within the design envelope through operating practices, and assurance through maintenance and inspection. If a loss of control of suspended load occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation. The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the NRC Safety Case(s), SCE management procedures including technical performance standards for Safety Critical Elements (SCEs) and Management System Performance Standards (MSPS) for Safety Critical Procedures. The application of Woodside Risk Management Procedures, and implementation of the WOMP, NWS Pipelines and NRC Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: • Ongoing hazard identification, risk assessment and the identification of control measures; and • Ongoing integrity management of hardware control measures in accordance with the SCE technical performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability. Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of facility operations, it is considered that MEE risk associated with a loss of control of suspended load is managed to ALARP.				

MEE-06 Loss of Control of Suspended Load from Platform – Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control adopted***
Demonstration of Acceptability				
Acceptability Statement: A loss of control of suspended load has been evaluated as having 'moderate' (B1 to C1) risk rating (via the consideration of applicable MEEs). As per **Section 2.6.3**. Woodside considers 'moderate' (B1) risk ratings as acceptable if managed to ALARP. Due to the consequence associated with MEE-06, Decision Type B has been applied; ALARP is 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. Acceptability is demonstrated with regard to the considerations described in **Section 6.7.3** (MEE-01). The considerations include principles of Ecological Sustainable Development, company and societal values, and other requirements (including laws, policies, standards and conventions). On the basis of the environmental impact assessment outcomes and Woodside's criteria for acceptability outlined in **Section 2.8.2**, this is considered an acceptable level of risk.				

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 16 Woodside will manage its activities to prevent loss of suspended load from riser platform events from resulting in material loss of containment to the marine environment. Loss of suspended load from riser platform risks to the environment are managed to limit risk to High[62] through maintenance of prevention and mitigative barriers during the Petroleum Activities Program.	**C 16.1** Maintaining platform lifting equipment to prevent platform lifting equipment failure or dropped/swinging loads that could result in an MEE.	**PS 16.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P20 – Lifting equipment, to: – prevent platform lifting equipment failure or dropped/swinging loads that could result in an MEE by maintaining lifting equipment integrity.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 14.1 Maintain structural integrity (impact protection) to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE. Refer to **Section 6.7.6**.	**PS 14.1** Refer to **Section 6.7.6**.	**MC 2.6.1** Refer to **Section 6.6.2**

[62] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 11.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the NRC. Refer to **Section 6.7.2**.	**PS 11.7** Refer to **Section 6.7.2**.	**MC 11.7** Refer to **Section 6.7.2**.
	C 11.8 Refer to **Section 6.7.3**	**PS 11.8** Refer to **Section 6.7.3**	**MC 11.8.1** Refer to **Section 6.7.3**
	Mitigation – hydrocarbon spill response	Refer to **Appendix D** for discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

6.7.9 Major Environmental Event Common Cause Event Failure Mechanisms: Safety and Environment Critical Element Failure CCE-01 and Human Error CCE-02

This section presents common mode failure causes and controls applicable across MEEs, which are also observed within the bowties of the MEEs discussed within sections above. Controls, EPSs and MC presented within this section are also considered relevant to MEE-01 to MEE-06.

NRC: Major Environment Event Datasheet	
MEE Number	All
Hazard Description	Generic SCE Failure
Hazard Description	
Hazard Overview and Scope	
There are a number of causes which contribute to failures of SCEs and other systems which might protect against an MEE. These include: • maintenance errors • defects • electrical supply failure • hydraulic supply failure • adverse environmental conditions. The generic SCE failure bowtie (**Figure 6-34** and **Figure 6-37**) illustrates the causes, outcomes and the controls in place to manage these failure mechanisms.	
Hazard Management (Bowtie Diagrams)	

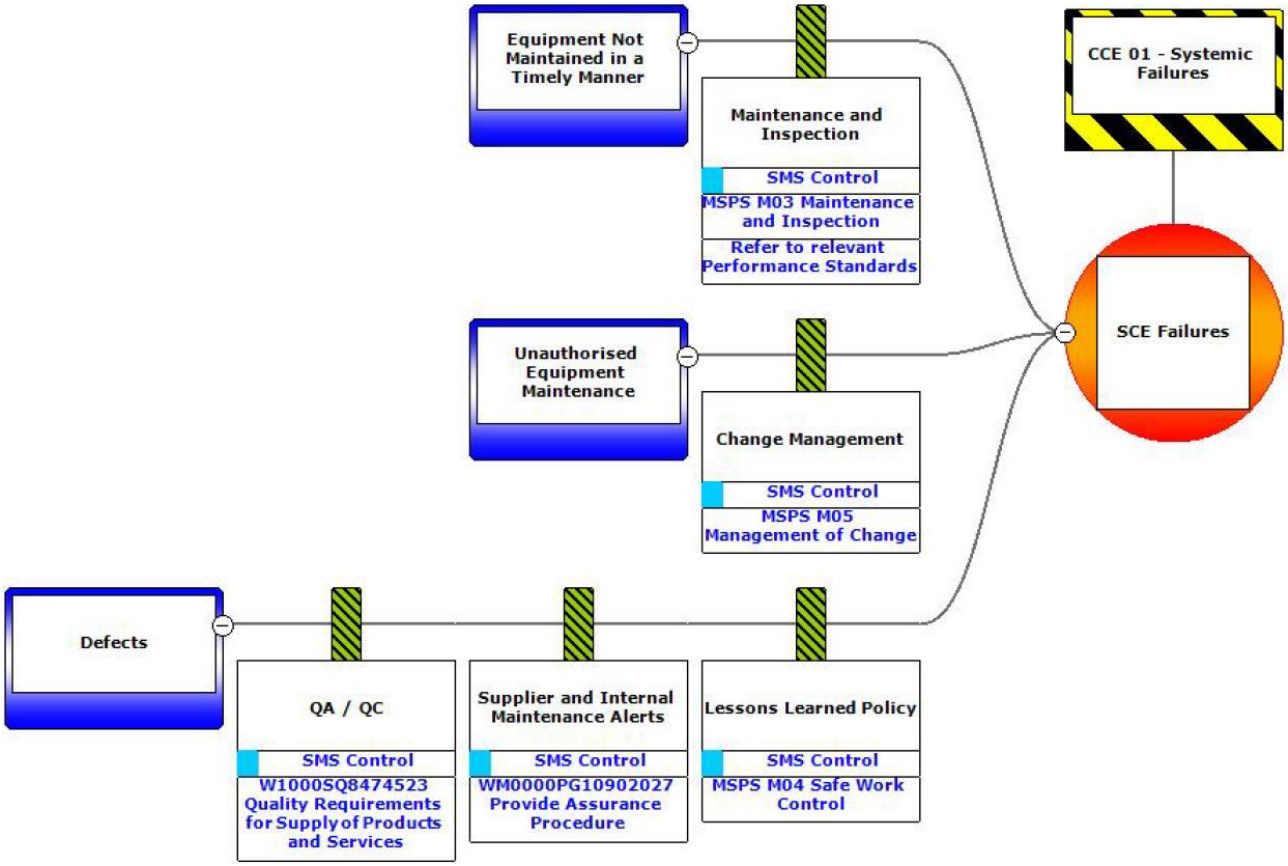


Figure 6-34: Generic bowtie – safety and environment critical failures (Causes 1 – 3)

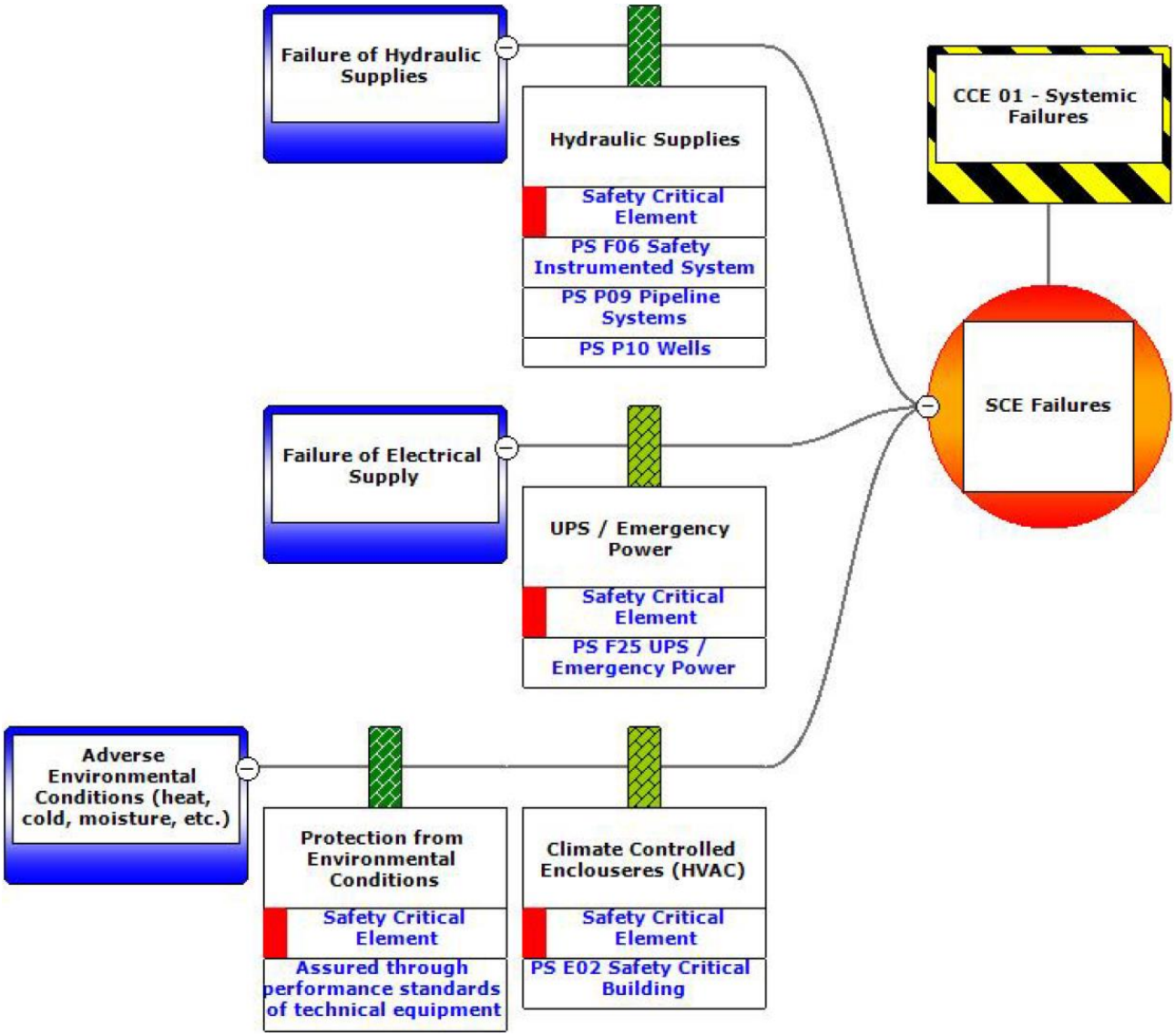


Figure 6-35: Generic bowtie – safety and environment critical failures (Causes 4 – 6)

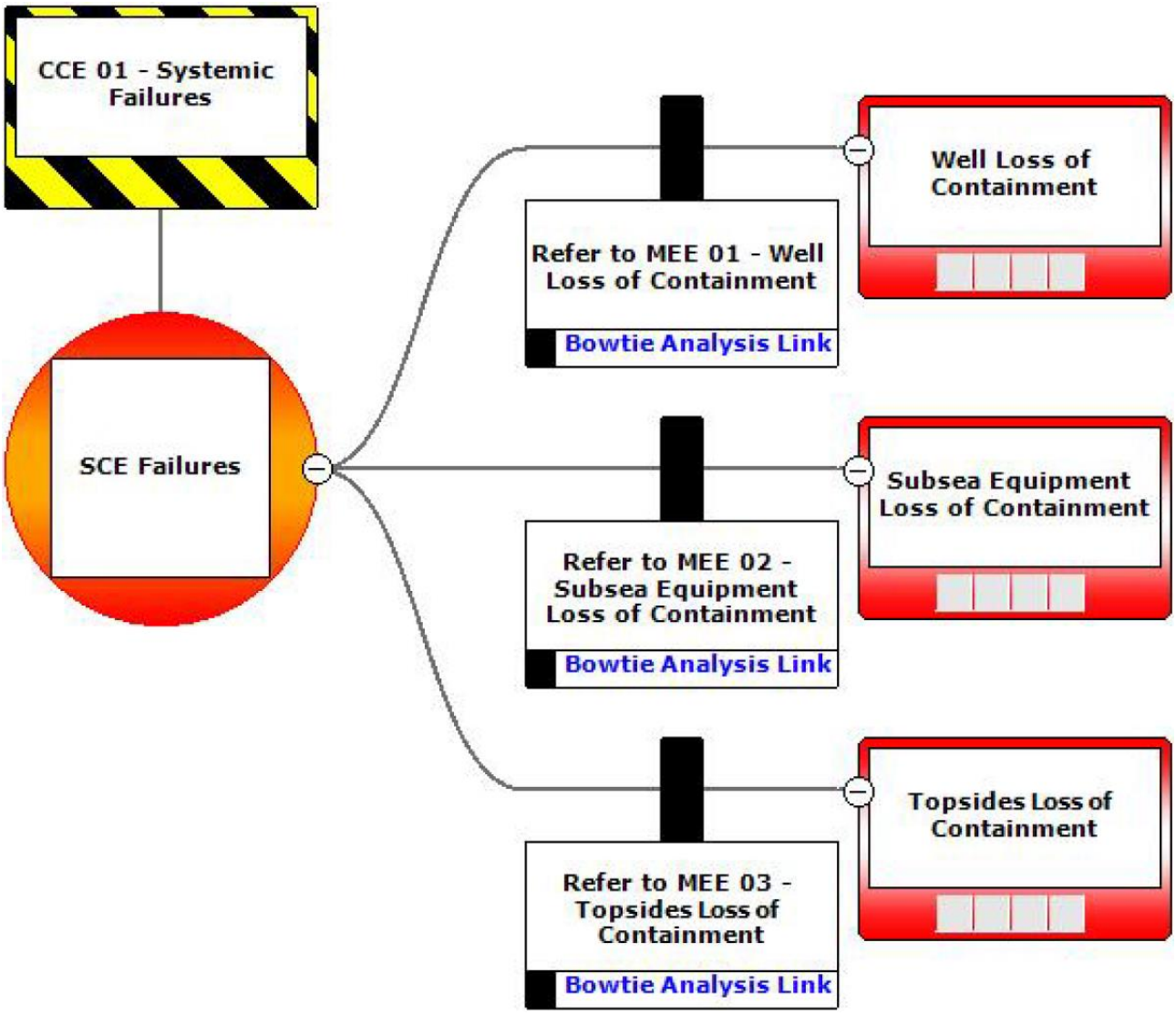


Figure 6-36: Generic bowtie – safety and environment critical failures (Outcomes 1 - 3)

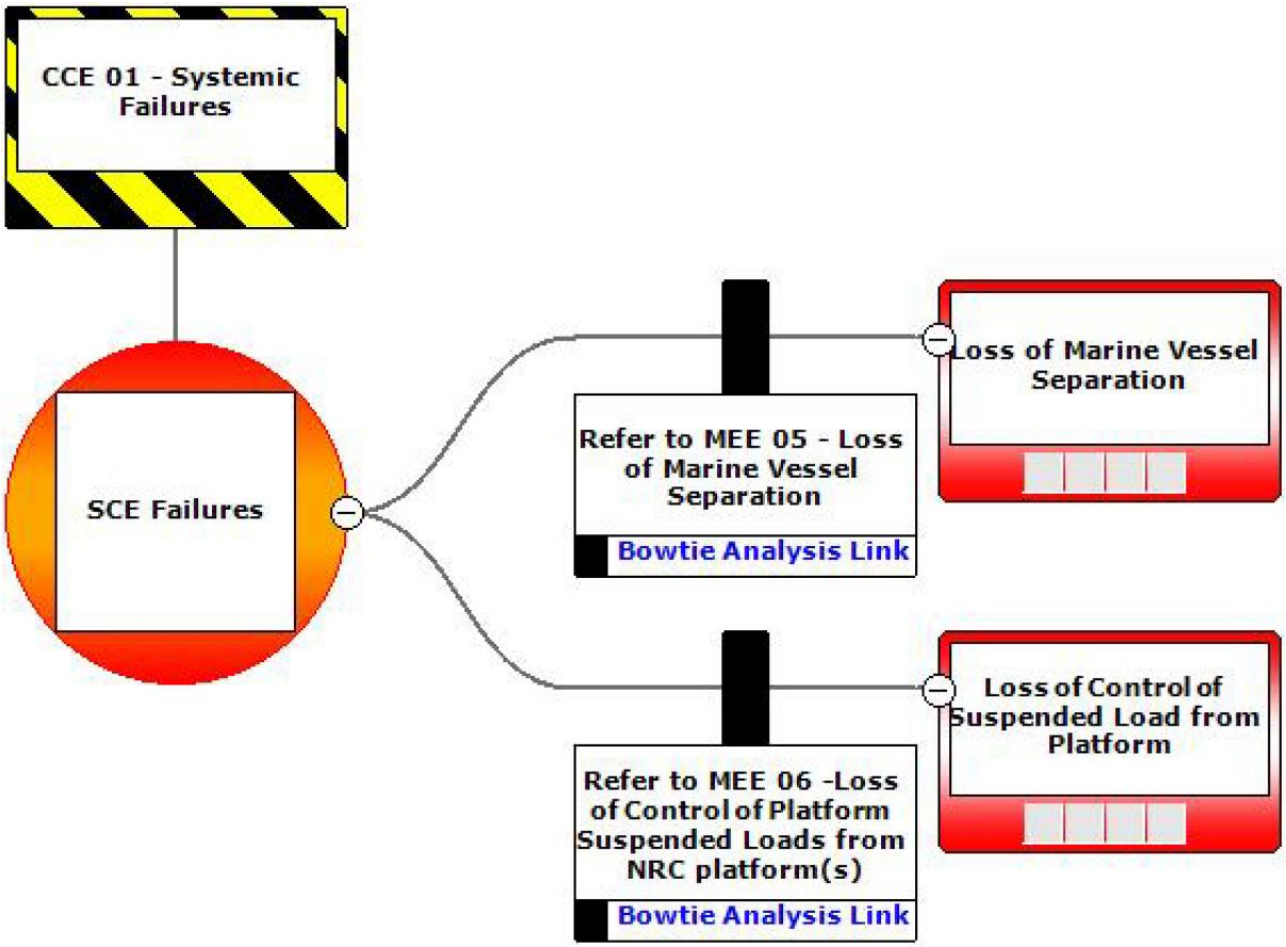


Figure 6-37: Generic bowtie – safety and environment critical failures (Outcomes 4 - 5)

CCE-01 Safety Critical Equipment Failure Risk Analysis and Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-14)***	***Control Adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	Maintain hydraulic supplies (e.g., to support Safety Instrumented Systems and actuation of SCE valves/isolations).	F06 – Safety Instrumented System	Elimination (Technical)	Yes **C 17.1**
	Maintain protection from environmental conditions.	P01 – Pressure Vessels P02 – Heat Exchanger P03 – Rotating Equipment P07 – Topsides / Surface Structures P08 – Piping Systems P09 – Pipeline Systems P10 – Wells P21 – Substructures	Elimination (Technical)	Yes **C 17.2**
Substitution	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Engineering Controls	Maintain UPS/emergency power system to supply essential safety systems.	F25 – UPS/Emergency Power	Prevention (Technical)	Yes **C 17.3**
	Maintain climate controlled enclosures to protect essential equipment from adverse environmental conditions.	E02 – Safety Critical Buildings	Prevention (Technical)	Yes **C 17.4**
Mitigating Barrier – Safety and Environmental Critical Elements				
Mitigation	N/A.	No mitigation controls were identified beyond those incorporated in design.		
Legislation Codes and Standards				
Procedures and Administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the NRC facility to: • identify hazards that have the potential to cause a MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety	NRC Safety Case	Prevention (Administration) Control based on legislative requirements – must be adopted	Yes **C 11.7**

CCE-01 Safety Critical Equipment Failure Risk Analysis and Demonstration of ALARP ALARP Control Measures				
	management systems identified as being required to reduce the risk to personnel associated with a MAE to ALARP, • thus contributing to management of associated potential environmental consequences of MAEs.			
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implement management systems to maintain: • MSPS 03 Maintenance and Inspection • MSPS 04 Safe Work Control • MSPS 05 Management of Change • Quality Requirements for Supply of Products and Service • Provide Assurance Procedure.	MSPS-03 MSPS-04 MSPS-05 Provide Assurance Procedure	Prevention (Administration)	Yes – See **Section 6.10** Implementation Strategy
Risk Evaluation				
Refer to MEEs.				

CCE-01 Safety Critical Element Failure Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
EPO 17 Refer to relevant MEE EPOs: EPOs 13-17	**C 17.1** Maintain hydraulic supplies (e.g., to support Safety Instrumented Systems and actuation of SCE valves/isolations).	**PS 17.1** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE technical Performance Standard(s) to prevent environment risk related Damage to SCEs for: F06 – Safety Instrumented System, to:	**MC 2.6.1** Refer to **Section 6.6.2**

CCE-01 Safety Critical Element Failure Performance Outcomes, Standards and Measurement Criteria			
		• maintain hydraulic supplies (e.g., to support Safety Instrumented Systems and actuation of SCE valves/isolations).	
	C 17.2 Maintain protection from environmental conditions.	**PS 17.2** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE technical Performance Standard(s) to prevent environment risk related Damage to SCEs for: P07 – Topsides/Surface Structures P08 – Piping Systems P09 – Pipeline Systems P10 – Wells P21 – Substructures, for each SCE to: • protect equipment from adverse environmental conditions (e.g., heat, cold, moisture, chemical reaction/ incompatibility).	**MC 2.6.1** Refer to **Section 6.6.2**
	C 17.3 Maintain UPS/emergency power system to supply Essential safety systems.	**PS 17.3** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE technical Performance Standard(s) to prevent environment risk related Damage to SCEs for: F25 – UPS/Emergency Power, to: provide continuous supply of power (emergency generation and uninterruptable power supply (UPS) to essential loads following a total (mains) power failure.	**MC 2.6.1** Refer to **Section 6.6.2**
	C 17.4 Maintain climate controlled enclosures to protect essential equipment from adverse environmental conditions.	**PS 17.4** Integrity will be managed in accordance with SCE Management Procedure (**Section 7.2.5**) and SCE technical Performance Standard(s) to prevent environment risk related Damage to SCEs for: E02 – Safety Critical Buildings to; protect essential equipment from adverse environmental conditions by: providing ventilation to ensure that the zonal classification is maintained within an enclosure or building via adequate or dilution ventilation	**MC 2.6.1** Refer to **Section 6.6.2**

CCE-01 Safety Critical Element Failure Performance Outcomes, Standards and Measurement Criteria			
		preventing ingress of hazardous products from external sources into buildings/enclosures located within a hazardous/ non-hazardous area.	
	C 11.7 Refer to **Section 6.7.3**	**PS 11.7** Refer to **Section 6.7.3**	**MC 11.7.1** Refer to **Section 6.7.3**

NRC: Major Environment Event Datasheet	
MEE Number	All
Hazard Description	Generic Human Errors

Hazard Description

Hazard Overview and Scope

There are a number of causes of human errors which contribute to MEEs, or which can result in failure or degradation of the barriers in place to protect against MEEs. These are presented in the following bowtie pages and include:

- task issues; e.g., poor task design; time pressures, task complexity
- poor physical interfaces/working environment
- provision of inappropriate tools for the task
- communication errors; i.e., poor-quality information, lack of clarity in instructions
- operator failings; e.g., competence, fitness, impairment or fatigue
- organisational issues; e.g., peer pressure, poor safety culture, inadequate supervision, lack of clarity on roles and expectations.

The generic human errors bowtie (**Figure 6-38**, **Figure 6-39** and **Figure 6-42**) illustrates the causes, outcomes and the barriers in place for these failure mechanisms. Human errors are managed solely via the WMS (no SCEs) and the bowtie is included in this section for completeness. Refer to **Section 6.10** Implementation Strategy for applicable Management System Procedures.

Hazard Management (Bowtie Diagrams)

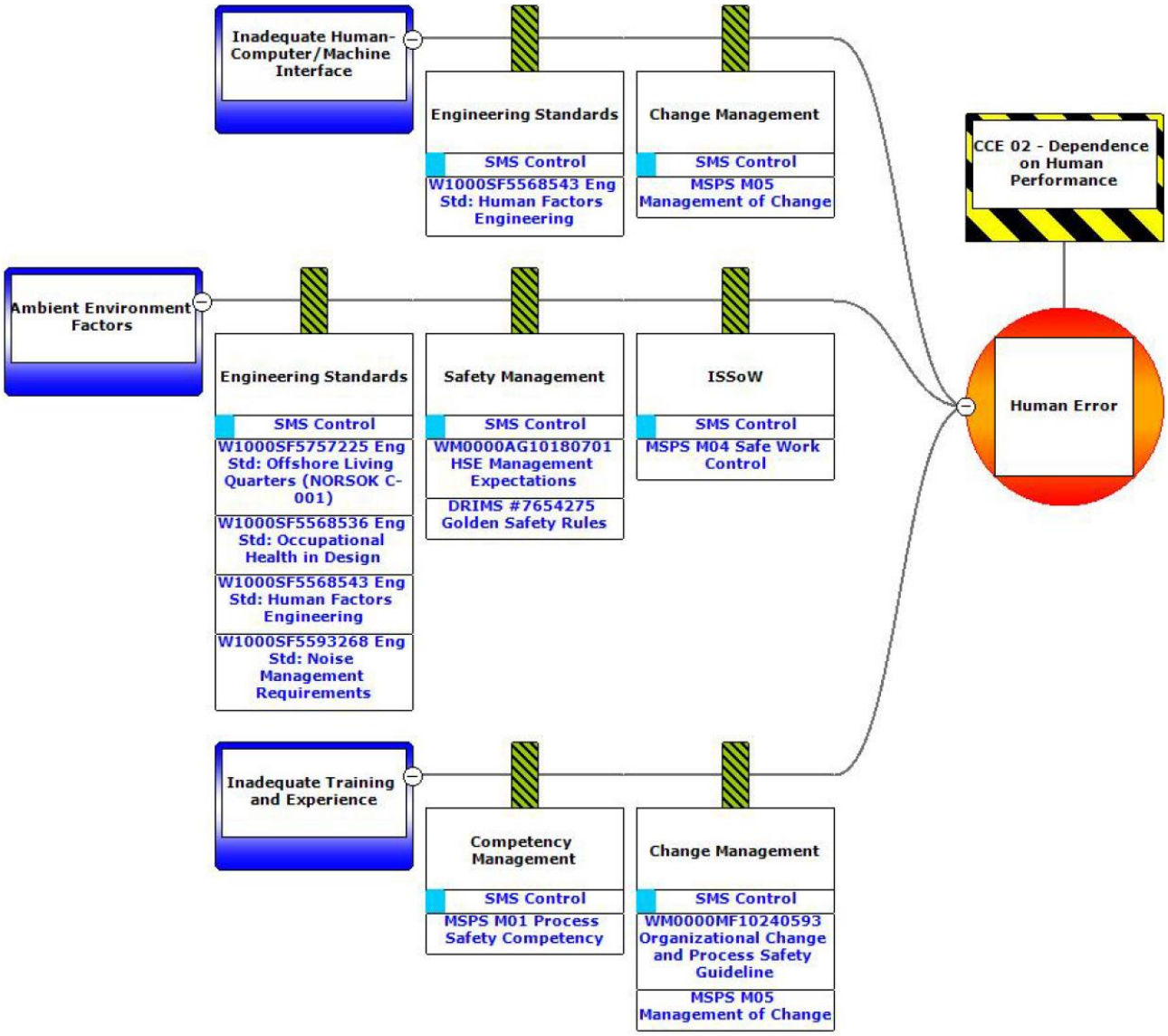


Figure 6-38: Generic bowtie – human error (Causes 1 to 3)

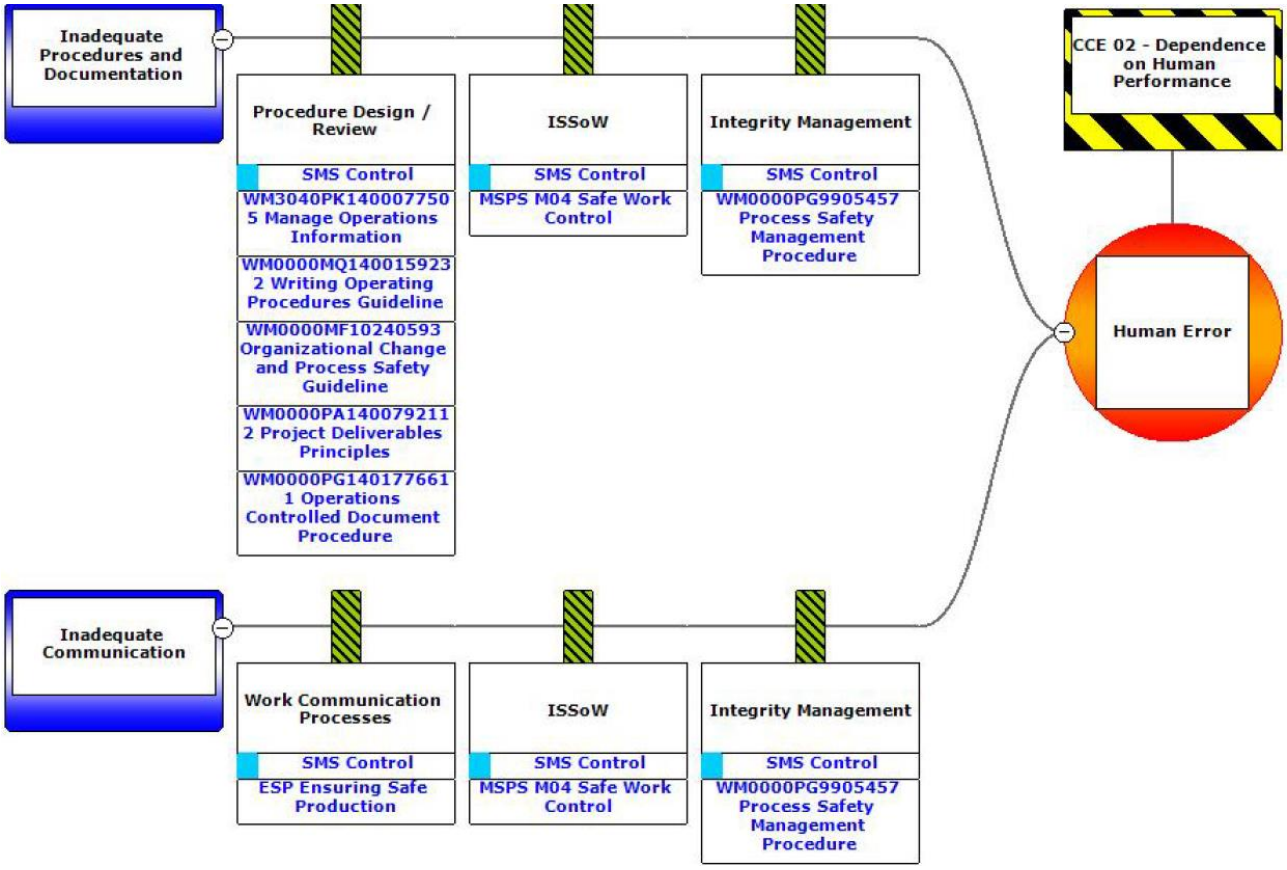


Figure 6-39: Generic bowtie – human error (Causes 4 to 5)

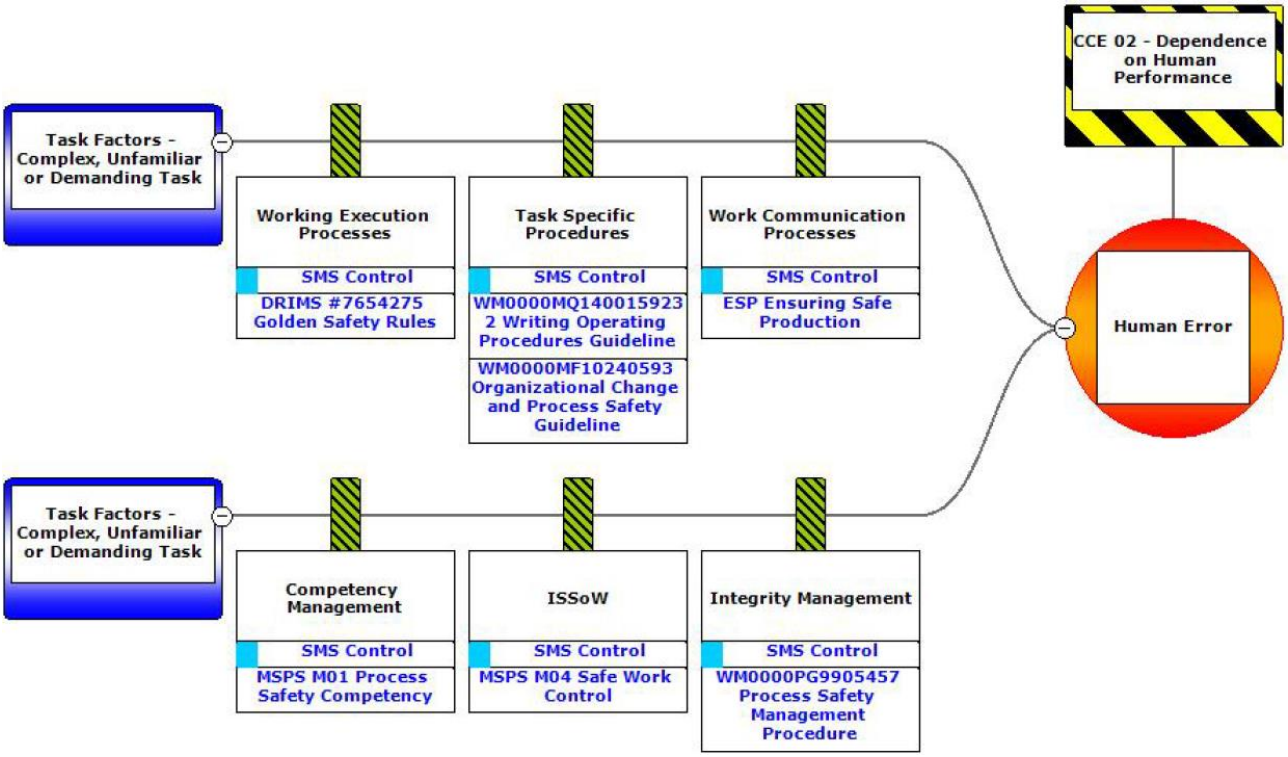


Figure 6-40: Generic bowtie – human error (Causes 6 to 7)

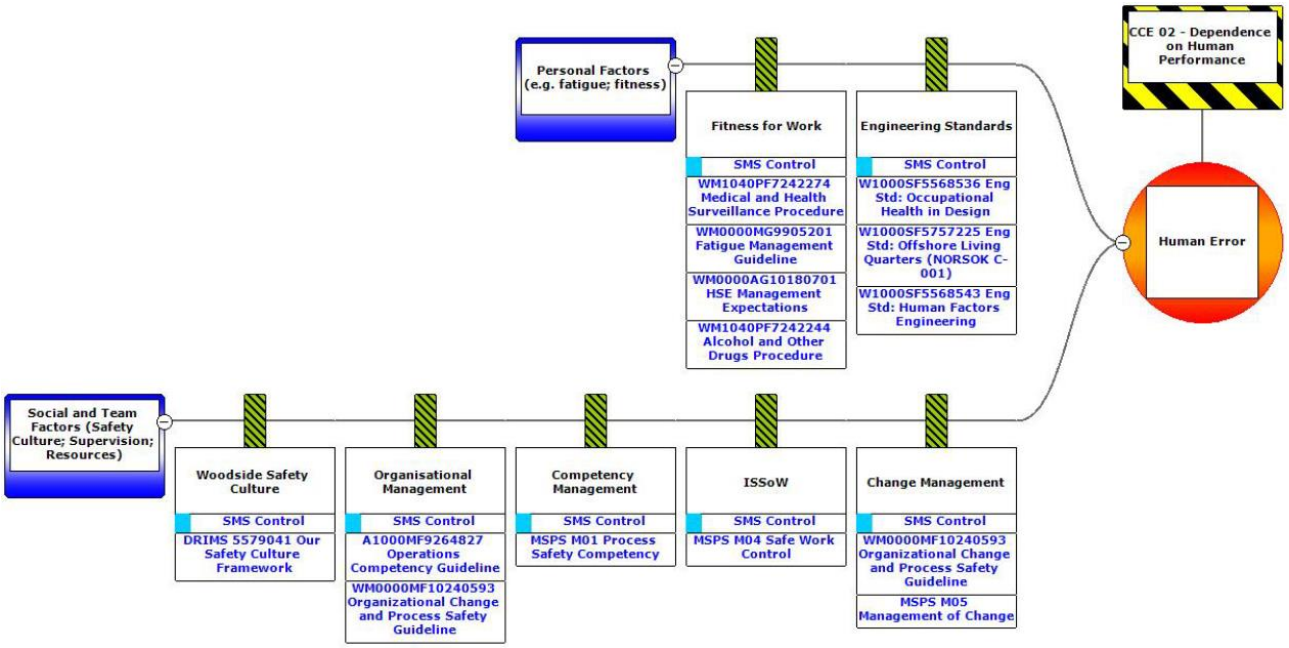


Figure 6-41: Generic bowtie – human error (Causes 8 to 9)

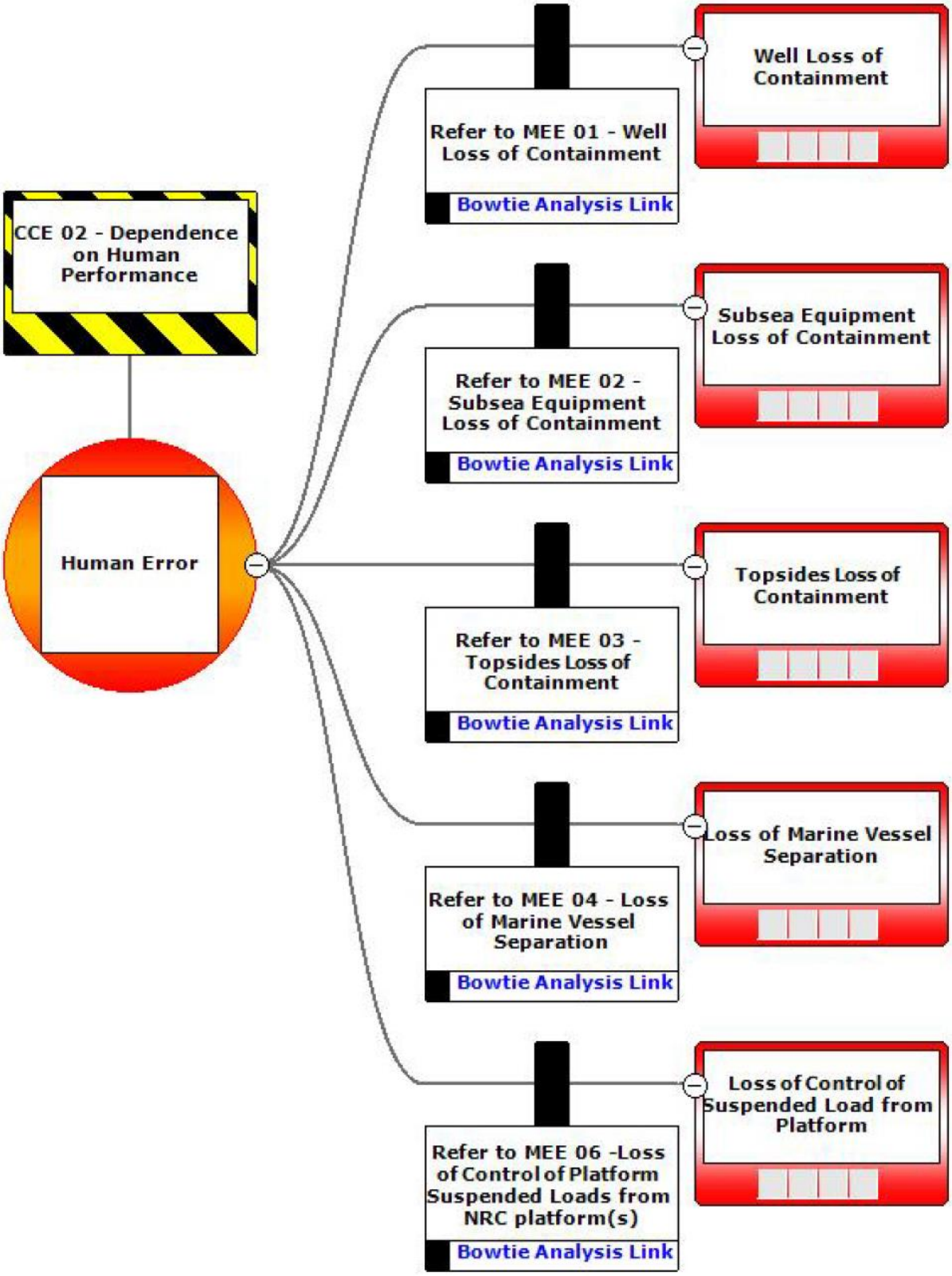


Figure 6-42: Generic bowtie – human error (Outcomes)

6.8 Unplanned Events (Accidents, Incidents, Emergency Situations)

6.8.1 Unplanned Discharges: Hydrocarbon release during Bunkering/refuelling and Chemical Release during Transfer, Storage and Use

Context		
Topsides – **Section 3.5.1** Operational Details – **Section 3.6** Pipeline and Riser System – **Section 3.5.3** Hydrocarbon and Chemical Inventories and Selection – **Section 3.10**	Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 0**	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-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Accidental discharge of marine diesel or chemicals to the marine environment during transfer, storage or use			✓			✓		A	D	1	M	LCS GP PJ	Broadly Acceptable	**EPO 18**

Description of Source of Risk

Marine Diesel Transfer, Storage and Use

Marine diesel is bunkered to the facility and may be bunkered to key support vessels stationed at the NRC for extended periods (e.g. ASV). Chemicals such as glycol (MEG and TEG) are also transferred by hose to the facility.

Mechanisms are available to capture diesel from process/piping associated with bunkering and fuel transfers, which can be used to drain to a caisson with an oil recovery system. The diesel unloading stations have isolation and vent valves to allow draining of bunkering hoses between uses.

Two credible scenarios for the loss of containment of marine diesel during bunkering operations have been identified:

- partial or total failure of a bulk transfer hose or fittings during bunkering or chemical transfer, due to operational stress or other integrity issues could spill marine diesel on to the deck and/or into the marine environment. This would be in the order of less than 0.2 m^3**,** based on the likely volume of a bulk transfer hose (assuming a failure of the dry break and complete loss of hose volume).
- partial or total failure of a bulk transfer hose or fittings during bunkering, refuelling or chemical transfer, combined with a failure in procedure to shutoff fuel pumps for a period of up to five minutes, resulting in approximately 8 m^3 marine diesel loss to the deck and/or into the marine environment.

Chemical Use and Storage

Chemicals will be used during the Petroleum Activities Program for a variety of purposes (refer to **Section 3.10.2**). Selection of chemicals is undertaken in accordance with the Woodside Chemical Selection and Assessment Environment Guideline. Spills of chemicals (including non-process hydrocarbons) can originate from stored hydrocarbons/chemicals or equipment on the platform, vessel decks or subsea (refer to **Section 6.6.4** for an assessment

of the impacts of planned chemical discharges). Operational process chemicals on the NRC are typically stored in dedicated vessels which have similar controls of those related to mitigating hydrocarbon releases (e.g. dedicated tanks, permanent piping to the process, isolatable by valves etc.). The chemical stored in the largest volume on the NRC is TEG, being an operational process chemical stored in bulk (35 m^3), followed by MEG and corrosion inhibitor approximately 8 m^3 (4 m^3 each per container).

Operational non-process chemicals and maintenance chemicals present on the NRC and support vessels are generally held in low quantities. Subsea Support Vessels undertaking IMMR activities may also store quantities of chemicals for subsea use. Accidental releases of small quantities of subsea chemicals may occur (e.g. deck spills). Operational experience indicates potential volumes of such spills is small (< 20 L). Subsea chemical use is described in **Section 3.10.2**; subsea operational chemicals are subject to the chemical selection process outlined in **Section 3.10.4**.

Chemical storage areas are typically set up in cabinets, or bunded storage areas to contain any releases to deck from transportable containers (e.g. IBCs, barrels, drums, pails etc.). Releases from equipment are predominantly from the failure of hydraulic hoses or minor leaks from process components, or spills during refuelling of equipment, which can either be located within bunded/drained areas or outside of bunded/drained areas. Subsea leaks may occur from subsea infrastructure, such as valves, which typically operate within a closed-loop system (i.e. no discharge during normal operations). For example, subsea isolation valves are controlled using hydraulic fluid, typically HW525.

ROV hydraulic fluid is supplied through hoses containing approximately 20 L of fluid. Hydraulic lines to the ROV arms and other tooling may become caught resulting in minor leaks to the marine environment. Small volume hydraulic leaks may occur from equipment operating via hydraulic controls subsea (subsea control fluid). These include the diamond wire cutter, bolt tensioning equipment, ROV tooling etc.

Quantitative Spill Risk Assessment

Small diesel spills rapidly spread on the water surface, with the diesel expected to evaporate and disperse rapidly (National Oceanic and Atmospheric Administration (NOAA) 2006). Woodside commissioned RPS to model several small marine diesel spills, including surface spill volumes of 8 m^3 in the offshore waters of northwest WA. The results of these models have indicated that exposure to surface hydrocarbons above the 10 g/m^2 threshold defined in **Section 4.1** is limited to the immediate vicinity of the release site, with little potential to extend beyond 1 km. Based on these modelling results, the potential impacts of the credible marine diesel spill scenario described above are reasonably expected to occur within 1 km of the release location.

The impact assessment assumes this release location to be at the NRC, as this is where all platform-based and most vessel-based spills would potentially occur. Given the nature and scale of the risk, along with the relatively low sensitivity of the receiving environment, no additional modelling studies were considered necessary to inform the impact assessment of unplanned discharges of hydrocarbons during transfer, storage and use.

Given the limited volume of the potential release and offshore location no modelling has been undertaken as it is within significantly less than the 1000 m^3 of MDO assessed under the loss of marine vessel separation scenario in **Section 6.7.6**.

Hydrocarbon Characteristics

Refer to **Section 6.7.2** for a description of the characteristics of marine diesel, including detail on the predicted fate and weathering of a spill to the marine environment.

Impact Assessment

Marine Diesel

Given the low viscosity of marine diesel, along with the high portion of volatile components, a spill of up 8 m^3 of marine diesel during transfer, storage or use during operations would spread and weather rapidly. The potential biological and ecological impacts associated with much larger hydrocarbon spills are presented in **Section 6.7.2**; further detail on impacts specific to a spill of marine diesel from a bunkering loss are provided below.

Environmental receptors at risk would be restricted to those in the immediate vicinity and may include:

- marine fauna, particularly fauna associated with the sea surface (e.g., seabirds, air breathing vertebrates)
- plankton.

Given the relatively small worst-case credible release volume, the non-persistent nature of marine diesel and the low sensitivity of the receiving environment within the Petroleum Activities Program (i.e., offshore open water environment, refer to **Section 4**), potential impacts are expected to be short term (<1 year) and confined to less than 1 km from the release location. Such impacts may include:

- localised decrease in water quality
- acute toxic effects to planktonic organisms in the immediate area of the spill.

Impacts to plankton may include acute toxicity resulting in mortality of planktonic organisms. Given the rapid turnover of plankton communities, these impacts would be short-lived (hours to days).

Impacts to fish are expected to be of no lasting effect, as fish species are mobile and expected to avoid the area affected by a marine diesel spill. Impacts to larger fauna such as cetaceans and marine turtles are expected to be light fouling, potentially resulting in irritation of sensitive membranes such as the eyes, mouth and digestive system (Helm *et al*., 2015). Mortality of larger fauna is not expected to occur.

No impacts to ecosystem function are expected.

No impacts are predicted to Ancient Coastline KEF. Although, it is overlapped by the Petroleum Activities Program due to the nature of the spill (i.e., surface spill) and the reduced likelihood of diesel components interacting with the seafloor where the KEF values (i.e., unique hard substrate and associated demersal finfish and benthic fauna) are situated in 125 m water depths, it is unlikely there will be impacts with the Ancient Coastline KEFs.

Minor, short term impacts may occur to other marine users (e.g., commercial fisheries); however, given the small scale of a worst-case marine diesel spill, fishing vessel exclusion within the PSZ, it is unlikely there would be any significant impact to commercial fishers.

Chemicals

MEG and TEG are miscible in water; both are considered PLONOR. A maximum credible spill of MEG or TEG is expected to mix with the receiving environment with no lasting environmental impact. Corrosion inhibitor is not OCNS rated but is expected to rapidly dilute in the receiving environment.

Accidental releases of chemicals decrease the water quality in the immediate area of the release. The consequence is expected to be slight given the temporary and localised nature of the spill, the water depths, the open ocean mixing environment, Petroleum Activities Program from sensitive receptors and relatively low credible release volumes. Depending on the chemical released the toxicity and/ or potential to bioaccumulate may potentially result in impacts to sediment quality, pelagic fish or other marine species in the vicinity of the discharge.

Potential impacts to plankton from an accidental chemical spill may include acute toxicity resulting in mortality of planktonic organisms. Given the rapid turnover of plankton communities and nature and scale of the credible releases, these impacts will be short-lived (hours to days). Impacts to fish are expected to be of no lasting effect, as fish species are mobile and expected to avoid the area affected by an accidental chemical spill. Impacts to air-breathing fauna such as cetaceans, birds and marine turtles, are expected to be restricted to irritation of sensitive membranes such as the eyes, mouth, and digestive system.

Slight, short term impacts may occur to other marine users (e.g. commercial fisheries); however, as there is limited fishing within the PAA (**Section 6.6.1**), it is unlikely there would be any significant impact to commercial fishers.

Summary of Potential Impacts to Environmental Values(s)

Given the adopted controls, it is considered that spills to the marine environment from bunkering, transfer, storage and use of hydrocarbons will not result in a potential impact greater than slight, short-term impacts on species, habitat (but not affecting ecosystems function), physical and biological attributes (i.e., Environment Impact – E).

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 complying with Marine Order 91 (Marine pollution prevention – oil) for safe vessel operations. Marine Order 91 reduces the risk of accidental hydrocarbon release during transfer.	F: Yes. CS: Minimal cost. Standard practice.	Marine Order 91 is required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Control based on legislative requirement – must be adopted.	Yes **C 7.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Good Practice				
Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • If chemicals with a different OCNS rating, subwarning or non-OCNS rated chemicals are required, chemicals are assessed in accordance with the procedure prior to use.	F: Yes. Woodside routinely implements a chemical selection process based on OCNS at the NRC. CS: Minimal. The OCNS is widely used throughout the industry, and chemical suppliers are aware of the requirements of the scheme.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Woodside's chemical selection process is used to ensure fluids discharged meet Woodside's chemical environmental risk assessment standards while still providing the required technical capability.	Yes **C 5.1**
Diesel bunkering hoses: • be pressure-rated at purchase to reduce the risk of accidental hydrocarbon release during bunkering. • have dry-break couplings and flotation on fuel hoses.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring the appropriate equipment is in place, tested and maintained appropriately, the likelihood of a spill occurring is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 18.1**
Implementation of bunkering procedures to reduce the risk of a hydrocarbon release as a result of a bunkering incident.	F: Yes. CS: Minimal cost. Standard practice.	Reduced the likelihood of an unplanned release.	Benefits outweigh cost/sacrifice.	Yes **C 18.2**
Safely storing chemicals/diesel to prevent the release to the marine environment.	F: Yes. CS: Minimal cost. Standard practice.	Reduces risk of unplanned chemical/diesel release.	Benefits outweigh cost/sacrifice.	Yes **C 18.3**
Incident reports are raised for unplanned releases within event reporting system.	F: Yes. CS: Minimal cost. Standard practice.	Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Control based on Woodside standard and regulatory requirements.	Yes **C 11.8**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Professional Judgement – Elimination				
None identified.				
Professional Judgement – Substitute				
None identified.				
Professional Judgement – Engineered Solution				
None identified.				
Emergency Response				
Mitigation – hydrocarbon spill response.		Refer to **Appendix D** for discussion around the ALARP assessment of controls related to hydrocarbon spill response.		
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 accidental spills of hydrocarbons during bunkering, transfer, storage and use. As no reasonable additional/alternative controls were identified that would further reduce the consequences and risks without grossly disproportionate sacrifice, the risks are considered ALARP.				
Demonstration of Acceptability				
Acceptability Statement: The consequence assessment has determined that, given the adopted controls, accidental spills of hydrocarbons and chemicals during bunkering, transfer, storage and use represent a moderate risk rating that is unlikely to result in a consequence greater than minor short-term impacts. Further opportunities to reduce the risks have been investigated above. The adopted controls are considered good oil-field practice/industry best practice and meet requirements of Australian Marine Orders. Consultation with relevant persons has not indicated any concerns in relation to accidental spills of hydrocarbons during bunkering, transfer, storage and use. The potential risks are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of accidental spills of hydrocarbons during transfer, storage and use to a level that is broadly acceptable.				

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 18 Woodside manages its activities to prevent material hydrocarbon or chemical loss of containment to the marine environment. Environment risk posed by chemical spills limited to Moderate[63] through	**C 9.1** Refer to **Section 6.6.6**	**PS 9.1** Refer to **Section 6.6.6**	**MC 9.1.1** Refer to **Section 6.6.6**
	C 5.1 Refer to **Section 6.6.4**	**PS 5.1** Refer to **Section 6.6.4**	**MC 5.1.1** Refer to **Section 6.6.4**
	C 18.1 Diesel bunkering hoses:	**PS 18.1** All diesel transfer hoses to have dry break couplings and	**MC 18.1.1** Records demonstrate diesel transfer hoses are fitted with dry break

[63] *Defined in* ***Section 2.6.3****.*

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
maintenance of prevention and mitigative barriers during transfer, storage and use during the Petroleum Activities Program.	• be pressure-rated at purchase to reduce the risk of accidental hydrocarbon release during bunkering. • have dry-break couplings and flotation on fuel hoses	pressure rating suitable for intended use.	couplings and are pressure rated.
	C 18.2 Implementation of bunkering procedures to reduce the risk of a hydrocarbon release as a result of a bunkering incident.	**PS 18.2** Implement Diesel Fuel System – Loading Bunkers – Standard Operating Procedure. Key requirements include: • Routine bunkering to be carried out when adequate lighting is available for spill detection unless following an activity-specific risk assessment approved by the Offshore Installation Manager (OIM). • Communications between the supply vessel and facility bunker station will be maintained during bunkering. • Hoses and connections to be visually checked during refuelling. • Tank levels will be monitored throughout bunkering. • Spill clean-up equipment will be available near the bunker station. • Bunkering hose inventory will be drained to the supply vessel before disconnection.	**MC 18.2.1** Records demonstrate bunkering undertaken in accordance with facility and contractor bunkering procedures.
		PS 19.2b Vessels will have in place their own bunkering plans,	

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
		checklists and SOPEP depending on the specifications of both the supplying and receiving vessel.	
	C 18.3 Safely storing chemicals/diesel to prevent the release to the marine environment.	**PS 18.3** Chemical/diesel storage areas for transportable containers on the riser platform will have adequate containment in place to contain an accidental chemical/diesel spill.	**MC 18.3.1** Riser platform chemical/diesel storage areas for transportable containers provided with adequate bunding/containment.
	C 11.8 Refer to **Section 6.7.3**	**PS 11.8** Refer to **Section 6.7.3**	**MC 11.8.1** Refer to **Section 6.7.3**.
	Mitigation – hydrocarbon spill response	Refer to **Appendix D** for discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

6.8.2 Unplanned Discharges: Hazardous and Non-hazardous Waste Management

Context		
Operational Details – **Section 3.6**	Physical Environment – **Section 4.4** 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-economic*	*Decision Type*	*Consequence / Impact*	*Likelihood*	*Risk Rating*	*ALARP Tool*	*Acceptability*	*Outcome*
Incorrect disposal or accidental discharge of non-hazardous and hazardous waste to the marine environment		✓	✓			✓		A	E	2	M	LCS GP	Broadly Acceptable	**EPO 19**

Description of Source of Risk

Non-hazardous and Hazardous Waste

Normal operations on the NRC and support vessels generate a variety of hazardous and non-hazardous wastes. These materials could potentially impact the marine environment, if incorrectly disposed of, lost overboard or discharged in significant quantities.

Non-hazardous wastes include domestic and industrial wastes, such as aluminium cans, bottles, paper and cardboard, scrap steel. Hazardous wastes include recovered solvents, excess or spent chemicals, oil contaminated materials (e.g. sorbents, filters and rags), batteries, used lubricating oils and potentially material containing Naturally Occurring Radioactive Material (NORMs)[64]. Sand and sludges may also be periodically generated during well unloading and clean-up operations, desanding, vessel maintenance and removal of redundant equipment. All waste materials not suitable for discharge to the environment, including hazardous wastes (i.e. liquid and solid wastes), generated on the NRC are transported to shore for disposal or recycling by Woodside's licensed waste contractor.

Consequence Assessment

The potential impacts of hazardous or non-hazardous solid waste/equipment accidentally discharged to the marine environment include contamination of the environment as well as secondary impacts relating to potential contact of marine fauna with wastes. This could result in entanglement or ingestion and lead to injury and death of individual animals. The temporary or permanent loss of waste materials into the marine environment is not likely to have a significant environmental impact, based on the location of the Petroleum Activities Program, the types, size and frequency of wastes that could occur, and species present.

Water and Sediment Quality

Hazardous solid wastes such as paint cans, oily rags, etc., can cause localised contamination of the water and sediment through a release of toxins and chemicals. Given likely small volumes of any unplanned solid waste

[64] *Qualitative measure*

discharge, and the occasional nature of the event, these would result in temporary and highly localised changes to the water quality.

Seabirds and Migratory Shorebirds, Fish, Marine Reptiles and Marine Mammals

The unplanned discharge of solid wastes can result in mortality to fauna, either through contamination or physical injury depending on the nature of the waste. Marine fauna, including fish, seabirds and shorebirds, marine mammals and marine reptiles may be impacted through ingestion or entanglement of waste or through exposure to toxic chemicals. Ingestion or entanglement of marine fauna has the potential for physical harm which may limit feeding/foraging behaviours and thus can result in mortalities. Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris was listed as a key threatening process under the EPBC Act in August 2003 (DoEE, 2018). The Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018) identifies EPBC Act-listed species for which there are scientifically documented adverse impacts resulting from marine debris. Marine turtles and seabirds in particular may be at risk from plastics which may cause entanglement or be mistaken for food (e.g., DoEE, 2018; Commonwealth of Australia, 2017) and ingested causing damage to internal tissues and potentially preventing feeding activities. In the worst instance this could have a lethal affect to an individual. Marine debris has been identified as threat in the Recovery Plan for Marine Turtles in Australia (2017–2027).

Impacts to species including fish, birds, marine mammals and marine reptiles from the unplanned discharge of solid waste is unlikely given low occurrence of unplanned discharges. Significant impacts are unlikely to occur at an individual level and will not occur at a population level, nor result in the decrease of the quality of the habitat such that the extent of these species is likely to decline.

The temporary or permanent loss of waste materials into the marine environment is not likely to have a significant environmental impact, based on the nature and scale of activities that may generate wastes, the types, size and frequency of wastes that could occur.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Support vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution Prevention – packaged harmful substances) 2014; • Marine Order 95 (Pollution prevention – Garbage).	F: Yes. CS: Minimal cost. Standard practice.	Implementation of Marine Order 94 and 95 reduces the likelihood of a harmful substance being released to the environment. Implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Controls based on legislative requirements – must be adopted.	Yes **C 19.1**
Good Practice				
Implementation of Waste Management Plan for Offshore Facilities.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a release of waste to the environment by providing guidance on storage, handling and transport of waste streams.	Benefit outweighs cost/sacrifice.	Yes **C 19.2**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
If safe and practicable to do so; vessel ROV or crane used to attempt recovery of material[65] environmentally hazardous or non-hazardous solid object/waste container lost overboard.	F: Yes. CS: Minimal cost. Standard practice.	Potentially reduces consequence by recovering object/waste container from the environment.	Benefit outweighs cost/sacrifice.	Yes **C 19.3**
Incident reports are raised for unplanned releases within event reporting system.	F: Yes. CS: Minimal cost. Standard practice.	Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Control based on Woodside standard and regulatory requirements.	Yes **C 11.8**
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.				

[65] 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.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
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 represents a low-risk rating and is unlikely to result in a consequence greater than localised impacts to water quality, marine sediment and marine species with no lasting effects. Woodside, across its operations (including the facility), 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 impacts and risks are employed through standard practices such as job planning, implementation of the Waste Management Plan and job hazard analysis practices. The adopted controls are considered good oil-field practice/industry best practice and meet requirements of Australian Marine Orders. 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 MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 19 Environmental risk from hazardous and non-hazardous waste management limited to Moderate[66] during the Petroleum Activities Program.	**C 19.1** Support vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution prevention – packaged harmful substances) 2014; • Marine Order 95 (Pollution prevention – Garbage).	**PS 19.1** Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class	**MC 19.1.1** Marine verification records demonstrate compliance with standard maritime safety procedure (Marine Order 94 and 95).
	C 19.2 Implementation of Waste Management Plan for Offshore Facilities	**PS 19.2** Implementation of Waste Management Plan for Offshore Facilities, including: • waste segregation and storage • records of all waste to be disposed, treated or recycled shall be maintained, and shall include (though not limited to) quantity of waste, waste type and	**MC 19.2.1** Records demonstrate implementation of Waste Management Plan for Offshore Facilities.

[66] *Defined in Section 2.6.3.*

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
		disposal/recycle location • waste streams shall be appropriately handled, tested, monitored and managed according to their hazard and recyclability class.	
	C 19.3 If safe and practicable to do so, using vessels, ROV or crane to attempt recovery of material environmentally hazardous or non-hazardous solid object/waste container lost overboard..	**PS 19.3** 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 19.3.1** Records detail the recovery attempt consideration and status of material environmentally hazardous or non-hazardous solid waste object/container lost to the marine environment.
		PS 19.4 Incident reports raised for unplanned loss of solid waste/equipment and recordable incidents notified for material124 unplanned loss, regardless of whether the item/s are recovered.	
	C 11.8 Refer to **Section 6.7.3**	**PS 11.8** Refer to **Section 6.7.3**	**MC 11.8** Refer to **Section 6.7.3**

6.8.3 Physical Presence: Interactions with Marine Fauna

Context		
Facility Layout and Description – **Section 3.5** Support Vessels – **Section 3.8**	Protected Species – **Section 0**	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-economic*	*Decision Type*	*Consequence / Impact*	*Likelihood*	*Risk Rating*	*ALARP Tool*	*Acceptability*	*Outcome*
Physical presence of support vessels resulting in collision with marine fauna.						✓		A	E	2	M	LCS PJ GP	Broadly Acceptable	**EPO 20**
Physical presence of bird proofing/exclusion devices resulting in injury to seabirds.						✓		A	F	1	L			**EPO 21**

Description of Source of Risk

Support vessels operating in and around the PAA may present a potential hazard to cetaceans and other protected marine fauna such as whale sharks and marine reptiles. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial injury or serious injury that may affect life functions (e.g., movement and reproduction) and mortality. The frequency and severity of impacts due to collisions vary greatly and is dependent on vessel type, vessel operation (specific activity, speed), physical environment (e.g., water depth), and the type of marine fauna potentially present and their behaviours.

Seabirds roost on the facility seasonally, if maintenance, process safety and/or health risks are identified associated with the presence of birds, it may be necessary to deter them from roosting on the facility by installing bird proofing/exclusion devices (e.g., work area humpies).

Consequence Assessment

Marine Mammals, Reptiles and Sharks

The likelihood of vessel-whale collision being lethal is influenced by vessel speed; the greater the speed at impact, the greater the risk of mortality (Jensen and Silber, 2004; Laist *et al*., 2001). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. According to the data of Vanderlaan and Taggart (2007), it is estimated that the risk is less than 10% at a speed of four knots. Vessel–whale collisions at this speed are uncommon and, based on reported data contained in the US NOAA database (Jensen and Silber, 2004), there only two known instances of collisions when the vessel was travelling at less than six knots. Both of these were from whale watching vessels that were deliberately placed among whales.

Vessels undertaking the Petroleum Activities Program within the Offshore Facility Operational Area are likely to be travelling less than 8 knots; much of the time vessels are holding station. Therefore, the risk of a vessel collision with protected species resulting in death is inherently low. Cetaceans considered to be at risk of vessel-collision due to relatively slow movement and proportion of time spent at or near the sea surface. BIAs for humpbacks (migration) and pygmy blue whale (distribution) that overlap the PAA. There are no known resting, breeding or feedings BIAs that

intersect the PAA. The humpback whale migration BIA, which overlaps the Export Trunkline Operational Area. The pygmy blue whale distribution BIA intersects both the Offshore Facility Operational Area and the Export Trunkline Operational Area, while the migration BIA lies 43 km north of the PAA. Adverse interactions between vessels and humpback or pygmy blue whales are considered to be unlikely. Both humpback whales and pygmy blue whales are only expected to be present during their seasonal migrations; refer to **Table 4-11** for information on migration timing.

Whale sharks are at risk from vessel strikes when feeding at the surface or in shallow waters (where there is limited option to dive). Whale sharks may traverse offshore NWS waters including the Export Trunkline Operational Area during their migrations to and from Ningaloo Reef and a BIA for foraging whale sharks overlaps with the Export Trunkline Operational Area. However, it is expected that whale shark presence within the Export Trunkline Operational Area would not comprise of significant numbers given the main foraging area is located 317 south-west in Ningaloo Marine Park and their presence in the PAA 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).

The Export Trunkline Operational Area overlaps internesting BIAs for the flatback, green, and hawksbill turtles with mating, foraging, migration, and nesting BIAs located 10 km south of the Export Trunkline Operational Area. However, the Offshore Facility Operational Area is unlikely to represent important habitat for marine turtles, given the absence of potential nesting or foraging habitat (i.e., no emergent islands, reef habitat or shallow shoals) and the water depth (approximately 110 to 125 m). The nearest potential nesting habitat is the Dampier Archipelago (approximately 7 km south of the Export Trunkline Operational Area). As such, individual turtles may infrequently transit the area. As such, the presence of marine turtles within the PAA is likely to be restricted to individual turtles infrequently transiting the area. It is acknowledged that there are significant nesting sites along the mainland coast and islands of the region. As with cetaceans, the risk of collisions between turtles and vessels increases with vessel speed (Hazel *et al*., 2007). The typical response from turtles on the surface to the presence of vessels is to dive (a potential 'startle' response), which decreases the risk of collisions (Hazel *et al*., 2007). Given the low speeds of vessels undertaking the Petroleum Activities Program, along with the expected low numbers of turtles within the PAA, interactions between vessels and turtles are considered to be highly unlikely.

It is not deemed credible that vessel movement associated with the Petroleum Activities Program could have a significant impact on marine fauna populations given (1) the low presence of transiting individuals, (2) avoidance behaviour commonly displayed by marine fauna, and (3) low operating speed of the activity support vessels (generally less than eight knots or stationary, unless operating in an emergency). Activities are considered unlikely to result in a consequence greater than slight, short-term disruption to individuals or a small proportion of the population, and no impact on critical habitat or fauna activity.

Seabirds

While the presence of the NRC facility provides an opportunistic resting location for seabirds, the installation of temporary bird proofing exclusion devices poses the potential risk of entanglement for individual birds. If deterrents are installed, birds will likely relocate to previous ranges (i.e., rather than landing on the NRC); therefore, no lasting effect is anticipated.

Cultural Values and Heritage

Through consultation and review of available literature (**Section 4.9**), Woodside understands that marine fauna that may be affected by a collision with a support vessel, such as marine mammals, whale sharks and turtles, are culturally important to Traditional Custodians. Traditional Custodians value these species both tangibly as well intangibly as they can be considered a resource or linked to songlines and dreaming stories. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have obligation to care for a species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country.

For example, activities that impact turtle populations and their marine environment may have an indirect impact on some Indigenous communities if they deplete hunting areas and threaten local food security (Delisle *et al*., 2018:251). Whale species may be subject of First Nations' increase ceremonies / rituals which are performed to enhance or maintain populations. As these thalu ceremonies are performed to maintain and increase populations of marine species, it is considered that management applies at the species/population level and not to individuals. For example, it is anticipated the thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound.

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

changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO, 2003).

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[67]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Implementing EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans to reduce the likelihood of collision with whales and dolphins.	F: Yes. CS: Minimal cost. Standard practice.	Reductions in speed around protected cetaceans reduce the likelihood of collision.	Controls based on legislative requirements – must be adopted.	Yes **C 4.1**
Good Practice				
Implement a Seabird management plan – to reduce likelihood of interaction with seabirds.	F: Yes. CS: Minimal.	Potential for slight reduction in the likelihood of seabird attraction to vessels and facility resulting in a reduced likelihood of bird strikes.	Potential benefits outweigh cost/sacrifice.	Yes **C 10.1**
Professional Judgement – Elimination				
Not using vessels.	F: No. No alternative to the use of vessels during the Petroleum Activities Program was identified. Given vessels must be used to undertake the Petroleum Activities Program, there is no feasible means to eliminate the source of risk. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement – Substitute				
None identified.				

[67] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[67]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
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 interactions with marine fauna. 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, interaction with marine fauna represents a medium-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 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 management of interactions with marine fauna is consistent with the objectives of approved conservation advice and recovery plans for marine fauna, including cetaceans and whale sharks, where human interference has been identified as a threat. 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 MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 20 Woodside manages its activities to prevent mortality of cetaceans resulting from interactions with support vessels. Environmental risk posed by chemical spills limited to Moderate[68] through mitigative measures during the Petroleum Activities Program. .	**C 4.1** Refer to **Section 6.6.3**	**PS 4.1** Refer to **Section 6.6.3**	**MC 4.1.1** Refer to **Section 6.6.3** **MC 4.1.2** Refer to **Section 6.6.3**
EPO 21 Woodside manages its activities in a manner that will prevent a substantial adverse effect to seabird populations. Environmental risk posed is limited to Low[69] through	**C 10.1** Refer to **Section 6.6.8**	**PS 10.1** Refer to **Section 6.6.8**	**MC 10.1.1** Refer to **Section 6.6.8**

[68] *Defined in **Section 2.6.3**.*

[69] *Defined in **Section 2.6.3**.*

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
mitigative measures during the Petroleum Activities Program.			

6.8.4 Physical Presence: Introduction of Invasive Marine Species

Context		
Support Vessels – **Section 3.8** Subsea IMMR Activities – **Section 3.11**	Regional Context – **Section 4.2** Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 0** Socio-economic– **Section 4.10**	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-economic***	***Decision Type***	***Consequence / Impact***	***Likelihood***	***Risk Rating***	***ALARP Tool***	***Acceptability***	***Outcome***
Invasive species in vessel ballast tanks or on vessels/ submersible equipment					✓	✓	✓	A	E	1	L	LCS GP PJ	Broadly Acceptable	**EPO 22**

Description of Source of Risk

Support vessels will be transiting to and from the PAA during the Petroleum Activities Program. Vessels may mobilise from domestic and international locations.

Support vessels may service routine needs (platform support vessels, refer to **Section 3.8.1**) and, less frequently, provide specialist services (subsea IMMR activities, ASV, refer to **Section 3.8.2**). 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 the Biosecurity Act 2015.

All vessels are inherently subject to some level of marine fouling. Organisms attach to the vessel hull, particularly in areas where organisms can find a suitable hard surface to settle (e.g., seams, strainers and unpainted surfaces) or where turbulence is lowest (e.g., niches, sea chests, etc). Organisms can also be drawn into ballast tanks during on-boarding of ballast water as cargo is unloaded or to balance vessels under load. Biofouling organisms can become established in an area through the release of propagules (e.g., eggs or larvae), or by attaching to substrate after becoming detached from the host vessel.

Non-indigenous marine species (NIMS) 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 thrive or cause demonstrable impacts. Indeed, the majority of NIMS around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. Only a subset of NIMS that become abundant and impact on social/cultural, human health, economic and/or environmental values can be considered invasive marine species (IMS).

During the Petroleum Activities Program, vessel activities that have the potential to lead to the introduction of IMS are:

- discharge of ballast water from vessels
- vessel interactions with the NRC facility

Consequence Assessment

IMS have historically been introduced and translocated around Australia by a variety of human means including biofouling and ballast water. Species of concern are those that:

- are not native to the region
- are likely to survive and establish in the region
- are able to spread by human mediated or natural means.

Species of concern vary from one region to another, depending on various environmental factors such as water temperature, salinity, nutrient levels and habitat type. These factors dictate their survival and invasive capabilities.

Introducing IMS into the local marine environment may alter the ecosystem, as IMS have characteristics that make them superior (in a survival and/or reproductive sense) to indigenous species. They may prey upon local species (which had previously not been subject to this kind of predation and therefore not have evolved protective measures against the attack), they may outcompete indigenous species for food, space or light and can also interbreed with local species, creating hybrids such that the endemic species is lost.

IMS have also proven economically damaging to areas where they have been introduced and established. Such impacts include direct damage to assets (fouling of vessel hulls and infrastructure) and depletion of commercially harvested marine life (e.g., shellfish stocks). IMS have proven particularly difficult to eradicate from areas, once established. If the introduction is captured early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life.

Despite the potential high consequence of the establishment of a marine pest within a high value environment as a result of introduction, unlike coastal or sheltered nearshore waters, the deep offshore open waters of the Petroleum Activity Program are deep and 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. **Table 6-25** provides an assessment of the IMS impacts and risks associated with the Petroleum Activities Program.

Epifauna and Infauna

Epifauna and infauna are susceptible to impacts from IMS due to the risk of changes to the ecosystem dynamics such as competition for resources and predation.

Discrete areas of hard substrate hosting sessile filter feeding communities that may be vulnerable to the impacts of IMS may also be associated within the Ancient Coastline at the 125 m Depth Contour KEF, which overlaps the Offshore Facility Operational Area. However, no areas of hard substrate characteristic of this KEF have been identified within the Offshore Facility Operational Area (Jacobs, 2014).While the vessels used for the Petroleum Activities Program have the potential to introduce IMS into the area, the deep offshore open waters of the Offshore Facility Operational Area are not conducive to the settlement and establishment of IMS (Geiling 2016). The Offshore Facility Operational Area is in an offshore continental shelf location more than 12 nm from shorelines and/or critical habitat and in waters approximately 80 to 162 m deep.

Activities which may occur in more shallow waters (within Commonwealth waters) along the export trunklines (approximately 30 to 120 m water depths) will occur infrequently.

The likelihood of IMS being introduced and establishing viable populations within the PAA or immediate surrounds is considered unlikely, with the potential settlement on subsea infrastructure not expected. Accordingly, impact to epifauna/infauna in the Petroleum Activities Program is not considered credible. Receptor sensitivity for epifauna and infauna is low, leading to a Slight (E) risk consequence. **Table 6-25** provides an assessment of the IMS impacts and risks associated with the Petroleum Activities Program.

Industry, Shipping, Defence

The establishment of IMS has the potential to cause changes to the functions, interests or activities of other users through indirect impact such as changes to fisheries target species resulting in economic and social implications, or due to compromised reputation to the oil and gas industry.

Given the low likelihood of IMS translocation to, and colonisation of environments within the PAA, the Petroleum Activities Program is highly unlikely to result in establishment of IMS, and as such not adversely affect other marine user activities in the region.

Based on the impact evaluation, the magnitude of potential impacts of a change to the functions, interests or activities of other users is slight (see **Table 6-25**). Receptor sensitivity for industry, shipping and defence is medium, leading to a Slight (E) risk consequence. The likelihood of the risk event occurring is Remote, therefore the risk is assessed as Low.

Summary of Potential Impacts to Environment Values

In support of Woodside's assessment of the impacts and risks of IMS introduction associated with the Petroleum Activities Program, a risk and impact evaluation of the different aspects of marine pest translocation associated with the activity was conducted. The results of this assessment are presented in **Table 6-25**.

As a result of this assessment, Woodside has presented the consequence as 'E', a slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attribute) and a likelihood as Highly Unlikely (1), resulting in an overall low risk following the implementation of identified controls.

Table 6-25: Assessment of the impacts and risks of invasive marine species introduction associated with the Petroleum Activities Program

IMS introduction aspect	Credibility of introduction	Consequence of introduction	Likelihood
Transfer of IMS from infected vessel to PAA and establishment on the seafloor or subsea infrastructure.	**Not Credible** The deep offshore open waters of the PAA away from shorelines and/or critical habitat, more than 12 nm from a shore and in waters 110-162 m deep, are not conducive to the settlement and establishment of IMS.		
Transfer of IMS from infected vessel to and subsequent establishment on the NRC facility.	**Credible** There is potential for the transfer of marine pests to occur.	If IMS were to establish, this would potentially result in fouling of intakes (depending on the pest introduced) and would likely result in the quarantine of the NRC platform until eradication could occur (through cleaning and treatment of infected areas), which would be costly to undertake. **Minor (D) – Reputation and Brand** Such introduction would be expected to have Minor (D) impact to Woodside's reputation and brand, and close scrutiny of asset level operations or future proposals. **Slight (E) – Environment** Environmental consequence of introduction of IMS to the NRC platform is considered Slight (E), localised and would relate to habitat directly on the NRC.	Highly Unlikely (1) The transfer of IMS from vessels to NRC is highly unlikely with the implementation of ballast water and biofouling controls and Woodside's IMS risk assessment. Spread of marine pests via ballast water or spawning in these open ocean environments is considered Highly Unlikely (1).
Transfer of IMS from infected vessel to and subsequent establishment on the NRC facility,	**Not Credible** Risk is considered so remote that it is not credible for the purposes		

followed by a subsequent transfer of IMS to a secondary vessel from the NRC facility.	of the Petroleum Activities Program. The transfer of a marine pest from an infected support vessel to the NRC facility was already considered highly unlikely given the offshore open ocean environment. For a marine pest to then establish into a mature spawning population on the NRC and then transfer to another support vessel is not considered credible. Support vessels only spend short periods of time alongside the NRC facility (i.e. during backloading or bunkering activities). There is also no direct contact (i.e. they are not tied up alongside) during these activities. It is also noted that Woodside has been conducting marine vessel movements between the NRC facility and Western Australia ports (such as Dampier) for a long period of time, and no IMS has been detected in these ports (Department of Fisheries 2017).		
Transfer of IMS from infected vessels to the export trunklines during IMMR activities.	**Not Credible** The risk is considered so remote that it is not considered credible for the purposes of the Petroleum Activities Program. The transfer of a marine pest from an infected support vessel onto one or both of the export pipelines is not considered credible (i.e. beyond the Woodside risk matrix). The export trunklines are located in an open ocean environment in depths between 30–120 m. Support vessels will only spend short periods of time near the export trunklines (i.e. during IMMR activities) and do		

	not make direct contact (i.e. the vessel will not be tied to the pipeline) during these activities.		

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
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 22.1**
Internationally sourced support vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of transfer of marine pests between vessels within the PAA. No change in consequence would occur.	Controls based on legislative requirements under the Biosecurity Act 2015 – must be adopted.	Yes **C 22.2**
Good Practice				
Woodside's IMS risk assessment process[70] will be applied to the vessels undertaking the Petroleum Activities Program. Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as treating internal systems) will be implemented to minimise the likelihood of IMS being introduced.	F: Yes. CS: Minimal cost. Good practice implemented across all Woodside Operations.	Identifies potential risks and additional controls implemented accordingly. In doing so, the likelihood of transferring marine pests between project vessels within the PAA is reduced. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 22.3**
Diver based monitoring of the riser platform for IMS.	F: Potentially. Diver based surveys are technically feasible for the facility but are not approved under the in-force Safety Case.	Riser platform monitoring does not prevent the potential for translocation (i.e., only as a mitigation measure). Detection may facilitate	Disproportionate. Interactions between the facility and support/subsea vessels posing IMS translocation risk is limited, and the vessels involved will	No

[70] *Qualitative measure.*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	CS: Significant. IMS inspections of in-water assets typically require vessel logistics and diver-based inspection teams to reliably detect IMS. This is a costly, time-consuming process that would likely require facility simultaneous operational constraints, and invariably introduces a series of significant safety risks in a hazardous offshore environment. Monetary cost of IMS survey for facility-sized infrastructure would be comparable to safe diver campaign arrangements in the order of $200,000/day plus mob/demob costs. Costs of ROV to support survey are in the order of $150,000/day plus mob/demob costs (based on subsea ROV hire costs). Health and safety exposure includes those of personnel while conducting diver-based surveys – four days of two to three people (based on subsea ROV surveys of similar size), as well as offshore vessel and facility simultaneous operations hazards.	subsequent development of options to manage IMS. Subsequent success may be limited due to structure complexity and hazardous environment.	have been managed through the implementation of Woodside's Invasive Marine Species Management Plan (IMSMP), a verified process which provides Woodside confidence in the verification of environmental performance. Consequently, any additional benefit gained through the implementation of this control is considered disproportionate, given material execution safety risks and controls already adopted (and noting already incurred cost through implementation of IMSMP (i.e., inspections and cleaning where risk warrants)), and the unlikely likelihood of a translocation event.	
Professional Judgement – Elimination				
Not using support vessels.	F: No. No alternative to the use of vessels during the Petroleum Activities Program	Not assessed, control not feasible.	Not assessed, control not feasible.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	was identified, given vessels must be used to undertake the Petroleum Activities Program. There is no feasible means to eliminate the source of risk. CS: Not assessed, control not feasible.			
No discharge of ballast water during the Petroleum Activities Program.	F: No. Ballast water discharges are critical for maintaining vessel stability. Given the nature of the Petroleum Activities Program, the use of ballast (including the potential discharge of ballast water) is considered to be a safety critical requirement. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement – Substitute				
Sourcing vessels based in Australia only.	F: Potentially. Limiting activities to only use local project vessels could potentially pose a significant risk in terms of time and duration of sourcing a vessel, as well as the ability of the local vessels to perform the required tasks. For example, there are limited installation vessels based in Australian waters. While the project will attempt to source support vessels locally it is not always possible. Availability cannot always be guaranteed when considered competing Oil and Gas activities in the region. In addition, sourcing	Sourcing vessels from within Australian will reduce the likelihood of IMS from outside Australian waters, however, it does not reduce the likelihood of introduction of species native to Australia but alien to the Petroleum Activities Program and NWMR, or of IMS that have established elsewhere in Australia. The consequence is unchanged.	Disproportionate. Sourcing vessels from Australian waters may result in a reduction in the likelihood of IMS introduction to the Petroleum Activity Program; however, the potential cost of implementing this control is grossly disproportionate to the minor environmental gain (or reducing an already remote likelihood of IMS introduction) potentially achieved by using only Australian based vessels, consequently this risk is considered not reasonably practicable.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	Australian based vessels only will cause increases in cost due to pressures of vessel availability. CS: Significant cost and schedule impacts due to restrictions of vessel hire opportunities.			
Inspecting all vessels for IMS.	F: Yes. Approach to inspect vessels is feasible. CS: Significant cost and schedule impacts. Thorough inspections require vessels to be removed from the sea (e.g., slipped or dry docked) and examined by an IMS expert. This process incurs significant financial and schedule sacrifices. Timely vessel-based support is integral to the safe and efficient operation of the facility and subsea infrastructure.	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. 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 has a remote likelihood to result in a slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attribute within the PAA. 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 Australian legislative requirements, including the *Biosecurity Act 2015*. 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 invasive marine species to an acceptable level.				

EPOs, EPSs and MCs For NRC Operations			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 23 Woodside manages its activities to prevent the introduction of IMS into the PAA. Environment risk posed by IMS is limited to Low[71] through prevention and mitigative barriers during the Petroleum Activities Program.	**C 22.1** 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 22.1** 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 22.1.1** Ballast water exchange records maintained by vessels which verify compliance against Ballast Water Management requirements.
	C 22.2 Internationally sourced support vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	**PS 22.2** Compliance with Australian Biofouling Management Requirements.	**MC 22.2.1** Records of implementation of biofouling management measure and pre-arrival reporting.
	C 22.3 Woodside's IMS risk assessment process[72] will be applied to the MODU, support vessels and relevant immersible equipment undertaking the Petroleum Activities Program. Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as treating internal systems) will be implemented to minimise the likelihood of IMS being introduced.	**PS 22.3** Before entering the PAA, vessels, are determined to be low risk of introducing IMS of concern and maintain this low risk status to mobilisation.	**MC 22.3.1** Records of IMS Vessel Risk Assessments maintained for all support vessels and relevant immersible equipment, as required by the management plan.
			MC 22.3.2 Records maintained of management measures which have been implemented where identified through the IMS Vessel Risk Assessment process.

[71] *Defined in* ***Section 2.6.3****.*

[72] *Woodside's IMS risk assessment process was developed with regard to the national biofouling management guidelines for the petroleum production and exploration industry and guidelines for the control and management of a ships' biofouling to minimise the transfer of invasive aquatic species (IMO Guidelines, 2011).*

6.9 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, 2024b)
- Recovery Plan for the Grey Nurse Shark (Carcharias taurus) 2014 (Commonwealth of Australia, 2014b);
- Sawfishes and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b); and
- 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 6-26 lists the objectives and (where relevant) the action areas of these plans and 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 6-27** to **Table 6-32**.

Table 6-26: Identification of applicability of recovery plan and threat abatement plan objections 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 biologically important areas, and population structure of blue whales in Australian waters is described	Y	Y	Y
Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Action Areas			
A. Assessing and addressing threats			
A.1: Maintain and improve existing legal and management protection	Y		
A.2: Assessing and addressing anthropogenic noise	Y	Y	Y
A.3: Understanding impacts of climate variability and change	Y		
A.4: Minimising vessel collisions	Y	Y	Y

EPBC Act Part 13 Statutory Instrument			Applicable to:		
			Government	***Titleholder***	***Petroleum Activities Program***
B. Enabling and measuring recovery					
B.1: Measuring and monitoring population recovery			Y		
B.2: Investigating population structure			Y		
B.3: Describing spatial and temporal distribution and defining biologically important habitat			Y	Y	Y
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					

EPBC Act Part 13 Statutory Instrument			Applicable to:		
			Government	***Titleholder***	***Petroleum Activities Program***
A1: Maintain, implement and improve efficacy of current legislative and management protection for southern right whales.	Y				
A2: Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.	Y	Y		Y	
A3: Understand impacts of climate variability and anthropogenic climate change on the species biology and population recovery.	Y				
A4: Manage and mitigate the threat of entanglements from commercial active or discarded fishing gear throughout the species' range in Australian waters.	Y				
A5: Assess, manage, and mitigate impacts from anthropogenic underwater noise.	Y	Y		Y	
A6: Manage, minimise and mitigate the threat of vessel strike.	Y	Y		Y	
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

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
Specific Objectives			
Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters	Y		
Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
Where practicable, minimise the impact of shark control activities on the grey nurse shark	Y		
Investigate and manage the impact of ecotourism on the grey nurse shark	Y		
Manage the impact of aquarium collection on the grey nurse shark	Y		
Improve understanding of the threat of pollution and disease to the grey nurse shark	Y	Y	Y
Continue to identify and protect habitat critical to the survival of the grey nurse shark and reduce the impact of threatening processes within these areas	Y	Y	
Continue to develop and implement research programs to support the conservation of the grey nurse shark	Y	Y	
Promote community education and awareness in relation to grey nurse shark conservation and management	Y		
Sawfish and River Sharks Recovery Plan			
Primary Objective			
To assist the recovery of sawfish and river sharks in Australian waters with a view to: • improving the population status leading to the removal of the sawfish and river shark species from the threatened species list of the EPBC Act • ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future.	Y	Y	Y

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
Specific Objectives			
Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species	Y		
Improve the information base to allow the development of a quantitative framework to assess the recovery of, and inform management options for, sawfish and river shark species	Y		
Develop research programs to assist conservation of sawfish and river shark species	Y	Y	
Improve community understanding and awareness in relation to sawfish and river shark conservation and management	Y		
Marine Debris Threat Abatement Plan			
Objectives			
Contribute to long-term prevention of the incidence of marine debris	Y	Y	
Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
Remove existing marine debris	Y		
Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
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 6-27: Assessment against relevant actions of the Marine Turtle Recovery Plan

Part 13 Statutory Instrument	Relevant action areas/objectives	Relevant actions	Evaluation	EPO, controls and PS
Marine Turtle Recovery Plan	**Action Area A3:** Reduce the impacts from marine debris.	**Action:** Support the implementation of the Marine Debris Threat Abatement Plan (TAP). Priority actions at stock level: G-NWS – Understand the threat posed to this stock by marine debris. LH-WA – Determine the extent to which marine debris is impacting loggerhead turtles. F-Pil – No relevant actions.	Refer **Section 6.8.2**. Not inconsistent assessment: The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to marine turtles. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the Petroleum Activities Program.	**EPO 19** **C 19.1, 19.2, 19.3** **PS 19.1, 19.2, 19.3**

Part 13 Statutory Instrument	Relevant action areas/objectives	Relevant actions	Evaluation	EPO, controls and PS
	Action Area A4: Minimise chemical and terrestrial discharge.	**Action:** Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats'; e.g., nesting habitat, seagrass meadows or coral reefs. Priority actions at stock level: G-NWS – Ensure that spill risk strategies and response programs include management for turtles and their habitats. LH-WA & F-Pil – Ensure that spill risk strategies and response programs include management for turtles and their habitats, particularly in reference to slow to recover habitats, e.g. seagrass meadows or corals.	Refer **Sections 6.6, 6.7** and **6.8**. Not inconsistent assessment: The assessment of accidental release of chemicals/hydrocarbons has considered the potential risks to marine turtles. Spill risk strategies and response program include management measures for turtles and their nesting habitats.	Refer **Sections 6.6, 6.7** and **6.8**. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are present in **Appendix D**.
	Action Area A8: Minimise light pollution.	**Action:** Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats. Priority actions at stock level: G-NWS – As above. LH-WA – No relevant actions. F-Pil – Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue.	Refer **Section 6.6.8**. Not inconsistent assessment: The assessment of light emissions has considered the potential impacts to marine turtles. Internesting, mating, foraging or migrating turtles are not impacted by light from offshore vessels. Based on the frequency and nature of IMMR activities, the impacts to adult turtles moving through the PAA from vessel lighting are expected to be localised and temporary with no lasting effect.	**EPO 10** **C 10.1, 10.2, 10.3** **PS 10.1, 10.2, 10.3**

Part 13 Statutory Instrument	Relevant action areas/objectives	Relevant actions	Evaluation	EPO, controls and PS
	Action Area B1: Determine trends at index beaches.	**Action:** Maintain or establish long-term monitoring programs at index beaches to collect standardised data critical for determining stock trends, including data on hatchling production. Priority actions at stock level: G-NWS – Continue long-term monitoring of index beaches LH-WA – Continue long-term monitoring of nesting and foraging populations F-Pil – no relevant actions	**Not inconsistent assessment:** Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program 1.	N/A
	Action Area B3: Address information gaps to better facilitate the recovery of marine turtle stocks.	**Action:** Understand the impacts of anthropogenic noise on marine turtle behaviour and biology. Priority actions at stock level: G-NWS – Given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise – Investigate the impacts of anthropogenic noise on turtle behaviour and biology and extrapolate findings from the North West Shelf stock to other stocks. LH-WA – No relevant actions. F-Pil – No relevant actions.	Refer **Sections 6.6.3.** **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to marine turtles. Noise related to the Petroleum Activities Program is not expected to result in behavioural response, injury or mortality of individuals, or any other lasting effect.	**EPO 4** **C 4.1** **PS 4.1**
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 6-28: 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 biologically important areas will be managed such that any blue whale continues to use the area without injury, and is not displaced from a foraging area.	Refer **Sections 6.6.3.** Not inconsistent assessment: The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales. Acoustic emissions from support vessels will not cause injury to any pygmy blue whale. There are no known or possible foraging areas for pygmy blue whales within or adjacent to the Operational Area. If the Petroleum Activities Program within the PAA overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route, but will continue on their migration.	**EPO 4** **C 4.1** **PS 4.1**
	Action Area A.4: Minimising vessel collisions.	**Action 3:** Ensure the risk of vessel strikes on blue whales is considered when assessing actions that increase vessel traffic in areas where blue whales occur and, if required, appropriate mitigation measures are implemented.	Refer **Section 6.8.3.** 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 PAA overlaps with an individual northbound or southbound migration, they may deviate slightly from the migratory route, but will continue on their migration. Vessel collisions with pygmy blue whales are highly unlikely to occur, given the low operating speed of support vessels.	**EPO 20** **C 4.1** **PS 4.1**
	Action Area B.3: Describing spatial and temporal distribution and defining biologically important habitat.	**Action 2:** Identify migratory pathways between breeding and feeding grounds. **Action 3:** Assess timing and residency within biologically important areas.	Not inconsistent assessment: Woodside contributes to Action Area B3 via its support of targeted research initiatives (e.g., satellite tracking of pygmy blue whale migratory movements).	N/A

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 6-29: 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.	Not inconsistent assessment: This EP assesses the potential impacts of the petroleum activity do not result in the risk of injury, auditory impairment and/or disturbance to southern right whales, particularly within the HCTS and BIAs that are located over 250 km from the Operational Areas.	N/A

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.	Not inconsistent assessment: The assessment of acoustic emissions has considered the potential impacts to southern right whales. The nearest BIAs and HCTS for the southern right whale being over 250 km from the Operational Areas therefore it is not expected that noise from the petroleum activity program will impact the southern right whales.	N/A
	A6: Manage, minimise and 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/.	Not inconsistent assessment: The assessment of vessel collision with marine fauna has considered the potential risks to southern right whales. The nearest BIAs and HCTS for the southern right whale being over 250 km from the Operational Areas therefore it is not expected that there is a risk of vessel strike.	N/A

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
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 6-30: 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 6.8.2.** Not inconsistent assessment: This EP includes an assessment of the impacts from accidental release of solid wastes on marine species.	N/A
			Refer **Sections 6.6, 6.7** and **6.8**. Not inconsistent assessment: The assessment of accidental release of chemicals / hydrocarbons has considered the potential risks to grey nurse sharks. Spill risk strategies and response program include management measures, as identified and required.	Refer **6.6, 6.7** and **6.8**. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are present in **Appendix D**.
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 6-31: 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 **6.6, 6.7** and **6.8**. Not inconsistent assessment: The assessment of accidental release of chemicals / hydrocarbons has considered the potential risks to sawfish and river shark. Spill risk strategies and response program include management measures, as identified and required.	Refer **6.6, 6.7** and **6.8**. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are presented in **Appendix D**.
	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 6.8.2.** Not inconsistent assessment: The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to sawfish. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the petroleum 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 6-32: Assessment against relevant actions of the Marine Debris Threat Abatement Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Debris TAP	**Objective 2:** Understand the scale of marine plastic and microplastic impact on key species, ecological communities and locations.	**Action 2.04:** Build understanding related to plastic and microplastic pollution.	Refer **Section 6.8.2.** Not inconsistent assessment: The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to the marine environment. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the petroleum activities program.	N/A
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.				

6.10 First Nations Cultural Features and Heritage Values Assessment

The identification of cultural features and heritage values of the environment as well as the social, economic and cultural features important to First Nation's people is integral to understanding the environment and any potential impacts and risks to the environment.

In line with Woodside's First Nations Communities Policy (Woodside 2022), Woodside seeks to avoid damage or disturbance to cultural heritage (including intangible heritage). If avoidance is not possible, Woodside will seek to minimise and mitigate any impacts, through consultation with First Nation communities and Traditional Custodians. Understanding that First Nations communities do not distinguish environment from culture, Woodside approaches the management of environmental species that hold culturally significant value through the environmental management measures outlined in **Sections 6.6, 6.7 and 6.8.**

Management of cultural heritage (tangible and intangible) associated with the environmental species is addressed in the assessment below. Mitigation of intangible heritage can include any measure or control aimed at ensuring the viability of the cultural heritage and its intergenerational transmission. This can include reducing impacts and risks to environmental features that are associated with intangible cultural heritage (UNESCO 2003; Australia ICOMOS 2013).

Only values and features of significance identified in **Section 4.9** (**Table 4-21)** as being likely or possible to interact with the EMBA are addressed in the risk assessment below. Management of these risks ensures that our First Nations concerns and interests are adequately acknowledged and protected throughout North Rankin Operations. Where general interests have been raised by First Nations groups / individuals Woodside endeavors to maintain ongoing engagement and information sharing to prevent and mitigate any impacts not captured throughout consultation or anticipated through the assessment below.

Description of source impact/risk (key aspects)
Physical presence of vessels
Several vessel types will be required to complete the activities associated with the Petroleum Activities Program (refer to **Section 3.8**). The physical presence and movement of support vessels within the PAA has the potential to displace other marine users. Refer to **Section 6.6.1** for more details.
Light emission from vessels
Project Vessels will have external lighting to support safe operations at night, as well as to communicate the presence and activities of support vessels to other marine users (i.e. navigational lights). This lighting typically consists of bright white (i.e. metal halide, halogen, fluorescent) lights, and is not dissimilar to lighting used for other offshore activities, including fishing and shipping. Lighting is required for the safe operation of the support vessels and cannot reasonably be eliminated.
Project Vessel light emissions in any one area will be limited by the transient nature of the works along the export trunkline route. Refer to **Section 6.6.8** for more details.
Acoustic emissions from vessels
There are various sources of underwater acoustic emissions during the Petroleum Activities Program primarily associated with infield vessel operations and support activities, such as geophysical surveys and other IMMR activities, with some sound will also be associated with the start-up and operation phase of the FPU and subsea facilities. Generally, sound associated with steady state operations will be limited, with periodic and short-term increases in sound associated with activities such as FPU installation, commissioning and start-up, and IMMR.
The sound levels and frequencies generated by vessels varies with the size of the vessel, speed, engine type and the activity being undertaken. Large vessels typically produce higher sound levels at lower frequencies than small vessels, although significant variation may be found among vessels within the same group. Sound levels tend to be greatest when engaging the throttle or thrusters, such as use of DP or when vessels are operating under load, compared with slow moving or idling vessels.

Description of source impact/risk (key aspects)
The greatest sound levels are likely to be associated with vessels using DP thrusters to maintain position on station. Refer to **Section 6.6.3** for more details. ***Seabed disturbance*** Gravimetry surveys, IMMR activities, ROV operations will be conducted at routine intervals, underwater acoustic positioning may be required and, flowline and/or export trunkline movement may occur, all resulting in seabed disturbance. Refer to **Section 6.6.2** for more details. ***Unplanned hydrocarbon release from vessel (basis of EMBA)*** The temporary presence of the support vessels in the PAA may result in a navigational hazard for commercial shipping within the immediate area. This navigational hazard could result in a third-party vessel colliding with the support vessels which could result in a loss of containment. Refer to **Section 6.8.1** for more details. The EMBA is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment. For this EP, the EMBA is the potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the highly unlikely event of the worst-case unplanned release. The EMBA therefore covers a larger area than the area that would be affected during any one single event. For further details refer to **Section 6.7.2.** The EMBA is driven by the distribution of entrained hydrocarbon above ecological thresholds and hence although Islands such as Barrow and Montebello Islands are within the EMBA, these are not expected to be affected unless there is shoreline contact above thresholds (**Section 6.7.2**).

Cultural Heritage Key Receptor Impact Assessment									
Planned Activity Aspect	*The potential environmental impact from the Petroleum Activities Program to receptors that have a cultural feature or heritage value have been summarised below to provide the context related cumulative impact on the cultural feature or heritage value.*								
Environmental impact assessment to receptors	**Value Potentially Impacted**								
	Marine mammals	***Marine reptiles***	***Fish***	***Seabirds***	***Coral***	***Benthic Habitats e.g. seagrass***	***Shoreline habitats e.g. Mangroves***	***Archaeological Heritage and Landscapes***	***Intangible Values***
	Impact Significance Level								
6.6.2 Physical Presence – Seabed Disturbance (Presence of subsea infrastructure, Scour, spans, and flowline movement inherent in design, IMMR activities)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6.6.3 Routine Acoustic Emission - Routine Operations	N/A	Slight (E)	Negligible (F)	Slight (E)	N/A	N/A	N/A	N/A	N/A
6.6.4 Routine and Non-Routine Discharges – Discharge of Hydrocarbons and Chemicals during	Slight (E)	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A	N/A

Subsea Operations and Activities									
6.6.7 Routine and Non-routine Atmospheric and Greenhouse Gas Emissions: Fuel Combustion, Flaring and Fugitives	Slight (E)	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A	N/A
6.6.8 Routine Light Emissions from Support Vessels	Slight (E)	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A	N/A
Unplanned Activity Aspect	*The potential environmental risk from the Petroleum Activities Program to species that have a cultural feature or heritage value have been summarised below to provide the context related cumulative risk on the cultural feature or heritage value.*								
	Risk Rating								
Environmental impact assessment to receptors	***Marine mammals***	***Marine reptiles***	***Fish***	***Seabirds***	***Coral***	***Benthic Habitats e.g. seagrass***	**Shoreline habitats e.g. Mangroves**	***Archaeological Heritage and Landscapes***	***Intangible Values***
6.7.3, 6.7.4, 6.7.5, 6.7.6. 6.7.7 and 6.7.8 Unplanned Hydrocarbon Release	Low	Moderate	Moderate	Moderate	Low	Low	Low	N/A	N/A
6.8.7 Unplanned Discharge: Chemical Release during Transfer, Storage and Use	Low	Moderate	Moderate	Moderate	N/A	N/A	N/A	N/A	N/A
6.8.2 Unplanned Discharge – Hazardous and Non-Hazardous Waste/Equipment	Moderate	Moderate	Moderate	Moderate	N/A	N/A	N/A	N/A	N/A
6.8.3 Physical Presence (Unplanned) – Interaction with Marine Fauna	Low	Low	Low	N/A	N/A	N/A	N/A	N/A	N/A
6.8.4 Physical Presence (Unplanned): Introduction and Establishment of Invasive Marine Species	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6.8.5 Physical Presence (Unplanned): Seabed Disturbance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detailed Impact and Risk Assessment
The Petroleum Activities Program has the potential impact cultural features and heritage values identified in **Table 4-21** through the following ways:
Archaeological Heritage and Landscapes
Places that are identified in **Section 4.9** for their value as archaeological sites are assumed to be at risk where there is potential for impact to the tangible or scientific elements of that place. This could include physical damage or disturbance to the archaeological integrity of a place. **Coastal/island archaeological sites (Fish Traps and Petroglyphs)** No coastal areas or islands exist within the PAA. A review of the DPLH's Aboriginal Heritage Inquiry System identified **728** Registered Heritage Places within the EMBA. These locations do exist within the EMBA boundary, however given the EMBA is driven by an unplanned hydrocarbon release there is no anticipated impact pathway from this activity to onshore archaeological sites above highest astronomical tide (HAT). Archaeological sites may exist in intertidal landscapes within the EMBA and may be exposed to hydrocarbons from an unplanned release, however there is no anticipated impact pathway from the presence of hydrocarbons on archaeological values, as this is not expected to impact the fabric or context of sites on an exposed shoreline site. Impacts to the heritage value of fish traps from an unplanned hydrocarbon release may occur indirectly through impacts to fish. However, it is expected that continued use of fish traps beyond their archaeological value will be preserved where fish species and distribution are maintained at a population level. With regard to fish, refer to species specific assessment below for further information, in addition to the impact and risk assessment in **Sections 6.7** and **6.8** respectively. **Submerged archaeological sites** No archaeological sites have been identified beyond terrestrial or intertidal areas, with the exception of two sites at Murujuga in Cape Bruguieres channel and Flying Foam Passage (Benjamin *et al*. 2020; Benjamin *et al* 2023), which are outside of the EMBA. Additionally, volcanic rock which may contain petroglyphs do not occur within the PAA Nevertheless, there is the potential for submerged archaeological sites on the Ancient Landscape. Planned assessments of the PAA, detailed in **Section 4.9** will identify any presence of submerged heritage values prior to undertaking activities. Additionally, any submerged heritage values not identified through these assessments are managed through the unexpected finds procedure detailed **Section 7.6**. Submerged archaeological sites (locations undefined) may exist on the Ancient Landscape within the broader EMBA. However, given the EMBA is driven by an unplanned hydrocarbon release, it is not expected to impact the seabed or archaeological material on or within it. Therefore, there is no anticipated impact pathway to submerged archaeological sites in the broader EMBA from the Petroleum Activities Program. **Submerged calcarenite ridges/paleo beach barrier systems** Calcarenite ridges have not identified within the PAA . These features on the "mid shelf" identified in UWA (2021) are considered to predate human occupation of the Australian continent and therefore are not expected to contain archaeological material within it. Features on the "outer shelf" may contain archaeological material, but it was determined that "landforms and features that were identified on the seabed as having a higher probability of hosting indigenous UCH [underwater cultural heritage] … have not been identified within the proposed export trunkline route." There is also no planned dredging or large-scale seabed disturbance of calcarenite features that may expose archaeological material within the PAA. Further there is no anticipated impact pathway to calcarenite ridges in the broader EMBA from the Petroleum Activities Program. **Submerged hills** Submerged hills have not identified within the PAA. These features on the "mid shelf" identified in UWA (2021) may be archaeologically prospective or culturally significant. The EMBA is driven by an unplanned hydrocarbon release, which is not expected to impact the seabed or features on it. There is no anticipated impact pathway to submerged hills in the broader EMBA from the Petroleum Activities Program.
Intangible Heritage
Intangible values that are identified in Section 4.9 are assumed to be at risk where there is potential for impact to the spiritual connections, features and/or places associated with the value. Impacts to intangible heritage can be individualised; the assessment below does not account for this variability but aims assess widespread impacts to general intangible values.

Access to Country

Impacts to access to Country may be classified as temporary (e.g. where exclusion zones exist around activities for safety reasons) or permanent (e.g. where infrastructure obstructs access or navigation). Impacts to access to Country can only occur in areas that were traditionally accessed by Traditional Custodians. This is anticipated to be focussed on areas adjacent to the coast.

Ceremonial sites

Activities that prevent the performance of ceremony at these sites will directly impact its values.

Connection to Country

Where people are displaced or disrupted (e.g., during colonisation) or where there is a loss of technical skills or environmental knowledge this may damage connection to Country (McDonald and Phillips, 2021).

Creation/dreaming sites; sacred sites; ancestral beings

Activities that physically alter landscape features may be assumed to potentially impact values of creation/dreaming sites, sacred sites or ancestral beings.

Cultural obligations to care for Country

Environmental impacts may be assumed to impact rights and obligations to care for Sea Country. Exclusion of Traditional Custodians from Sea Country (e.g., by restricting access) or decision-making processes (e.g., by not conducting ongoing consultation) are other potential sources of impact.

Kinship systems and totemic species

It is assumed that marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood that these relationships do not prohibit people outside of that “skin group” from hunting or eating that same species (Juluwarlu 2004). It is therefore inferred that the management of totemic or kinship species applies at the species/population level and not to individual plants and animals.

Knowledge of Country/customary law and transfer of knowledge

Direct impact to communities practicing these skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in population. Therefore, the transmission of these skills is expected to be impacted where there are impacts at the species/population level. Limitations on access to sites or disruption/relocation of First Nations communities may have implications for the preservation of First Nations knowledge.

Resource collection

Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, marine species (as resources) will be impacted where there is an impact at the species/population level.

Songlines

Songlines can become lost, fragmented, or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). 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).

Marine Ecosystems and Species

Marine ecosystems may hold both cultural and environmental value, with cultural and environmental values intrinsically linked (DCCEEW 2023, MAC 2022 as cited in Woodside 2023a). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within sea country—the seascape which Traditional Custodians view, interact with or hold knowledge of.

Benthic habitats (coral, seagrass)

Through consultation, First Nations groups identified benthic habitats as valuable for their ecological values, including corals attracting fish and seagrass providing shelters for fauna, as well as an important habitat for dugongs. Additionally, coral is valued by Murjuga Aboriginal Corporation (MAC) for its aesthetic values.

As described in Section 6.7 and 6.8 given hydrocarbon characteristics, rapid weathering, short-term exposure, as well as the response strategies planned to be deployed, an unplanned release is not expected to result in a level of exposure to coral and seagrass that would cause an adverse impact on marine ecosystem functioning or integrity results. As such, cultural values and intangible cultural heritage associated with benthic habitats are expected to be maintained.

Fish and Cephalopods

Fish and squid have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level.

Through consultation, fish were identified as important agents in the management of the broader ecosystem. It may be assumed that inter-generational transmission of cultural knowledge relating to fish may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). Intangible cultural heritage associated with fish, including inter-generational knowledge regarding fishing techniques and migratory patterns, can be managed by reducing impacts to fish in nearshore marine environments to which this cultural knowledge is intrinsically connected.

The octopus is an important totem to Ngarla People and features in the creation story of Solitary Island. There are increase ceremonies/rituals for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites in the reviewed literature were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are preformed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals.

The potential impacts from the Petroleum Activities Program on fish[73] are not considered to be ecologically significant at a population level. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Whales, dolphins and dugongs

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 in the reviewed literature were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals—for example the thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound. Reviewed literature (DBCA 2020) also includes information that is marked as information that cannot be copied, reproduced or used without consent. The values described in the literature are environmental in nature, apply to marine mammal behaviours at a population level and are managed through existing environmental controls.

Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Whale symbology expressed through stories, music, and dance can reflect a group's connections with the sea, as well as marine fauna, which then comprise a group's cultural values (Ardler 2021; Bursill et al. 2007; Cressey 1998). Whales also speak to a broader connection that exists between First Nation people and their surrounding environment. Beyond mythology and symbolism, whales can be connected with various economic and social functions associated with everyday life. Cultural knowledge of whales, whale migration, behaviour and the related marine environment may all be important in ensuring the continuation of these socio-economic functions and other related activities that remain valuable to First Nations people (Fijn 2021). No impacts to communities' ability to perform or

[73] Squid and octopus are considered to be impacted through similar impact pathways as fish, and hence the conclusion represented here are considered appropriate for cephalopods.

transmit stories, music or dance are anticipated from the Petroleum Activities Program. Where timing or performance is linked to sighting or engaging with these species, impacts may occur where numbers or migration behaviours are impacted at a population level.

First Nations groups have expressed interest about whale migratory routes and studies. Inter-generational transmission of cultural knowledge (including songlines) relating to marine mammals may be impacted where changes to population or behaviour at a population level results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

Potential impacts to cetaceans from planned activities are limited to behavioural impact, which may include temporary and localised deviations from migratory pathways for cetaceans. However, no permanent impacts preventing cetaceans from entering or occupying the areas have been identified. These impacts and risks are not considered to be ecologically significant at a population level, and hence are not expected to impact the value of marine mammals, including the transmission of cultural knowledge. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Marine reptiles (turtles)

Turtles and their eggs have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level.

Intangible cultural heritage may also include the transmission of cultural knowledge about marine reptiles, such as nesting areas, hunting areas and migratory patterns. Cultural knowledge may also be conveyed through stories, such as the turtle being trapped in the sea as a result of its greed for berries as recounted by Capewell (2020). Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). First Nations groups have expressed an interest regarding turtle monitoring programs and migration patterns. Activities that impact turtle populations and their marine environment may have an indirect impact on some Aboriginal communities as this can limit access to cultural sites or deplete hunting areas that would threaten local food security (Delisle et al. 2018:251). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

Potential impacts to marine reptiles are likely to be restricted to temporary behavioural changes, which are not considered to be ecologically significant at a population level, and hence not expected to impact the value of marine reptiles, including the transmission of cultural knowledge or use as a resource. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Seabirds

Seabirds have been identified through literature as a culturally significant species (Malgana Aboriginal Corporation 2021), as well as a resource (seabird eggs; Smyth 2007). Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level. Intangible cultural heritage may also include the transmission of cultural knowledge about seabirds, such as nesting areas, hunting areas and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021) Inter-generational transmission of cultural knowledge relating to seabirds may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

Potential impacts from the Petroleum Activities Program on seabirds is assessed to be Slight (E). Long term impacts to seabird populations are not expected and as such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Shoreline habitats (mangroves)

Through consultation, First Nations groups identified shoreline habitats as valuable for their ecological values, including mangroves for providing shelter to marine invertebrates, which are identified resources, and potential nursery for turtles. Literature also notes that mangroves are also valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002) and Smyth (2007) reports that mangrove seeds are used as a resource by Ngarda-Ngarli (the collective term for the Traditional Custodians who look after Murujuga Country).

There is no overlap between the PAA and mangrove habitat, and no planned impacts to mangroves from the Petroleum Activities Program. In the event of an unplanned hydrocarbon release mangrove habitats may be affected by shoreline accumulation. However, as described in Section 6.7.3, given the non-persistent nature of the hydrocarbons, no significant effects to mangrove habitat are expected to occur. As such, cultural values and intangible cultural heritage associated with shoreline habitats are expected to be maintained.

Murujuga

Murujuga (Burrup Peninsula), including the Murujuga National Park, is most widely known for its large collection of rock art (petroglyphs). The Traditional Owners of Murujuga have a deep cultural and spiritual connection to the rock art of the Burrup Peninsula, which provides a record of Aboriginal lore, dreamtime stories, customs, and local knowledge of the land and its resources (MAC 2019).

The presence of industry on the Burrup Peninsula has generated concerns from some stakeholders that these emissions may lead to an accelerated weathering of rocks on which rock art is present which may reduce the visibility or destroy the rock art. This is based on a hypothesis that deposition of NO_X, SO_X and ammonia (NH_3) from anthropogenic industrial sources have the potential to increase the acidity of the rock surface through chemical and/or biological processes and that acidic conditions may then accelerate the weathering of rock patina, eroding or affecting the contrast of the rock art. Research to date on the impacts of emissions on rock art has not been conclusive, and there are currently no set air quality thresholds for the protection of rock art. Key emissions as they relate to NRC onshore power generation and process emissions include oxides of nitrogen (NOx), carbon monoxide (CO), VOCs and a very minor contribution of SO_2. Although numerous academic, government and industry studies into this hypothesised potential impact pathway have been conducted since 2004, the findings from these studies to date has not been conclusive or provided credible standards for determining possible emissions levels. The WA Government is currently implementing the Murujuga Rock Art Strategy, which plans to develop a long-term framework to guide the management and protection of the rock art located on the Dampier Archipelago and the Burrup Peninsula which builds on these studies. The Department of Water and Environmental Regulation (DWER) has primary responsibility for the implementation of the Strategy, which is being undertaken in partnership with the MAC, representing the Traditional Owners of Murujuga, and in consultation with stakeholders, including the community and industry. Key aspects of the Strategy are to:

- establish an Environmental Quality Management Framework which includes the development of guidelines and standards, based on sound Scientific information, which will provide warning of potential harmful effects and if management actions are required to protect the rock art from harm develop and implement a robust program of monitoring and analysis to determine whether change is occurring to the rock art on Murujuga commission scientific studies to support the implementation of the monitoring and analysis program and management against environmental quality criteria establish governance communication processes which involve key stakeholders.

The Strategy is intended to provide a “transparent, risk-based and adaptive framework for monitoring and managing environmental quality to protect the rock art on Burrup Peninsula from industrial emissions” (DWER 2019).

Woodside actively supports the implementation of the Murujuga Rock Art Strategy through membership of the Murujuga Rock Art Reference Group and provides funding associated with the Murujuga Rock Art Monitoring Program. Woodside also supports the coordinated approach for an atmospheric deposition monitoring program to be established under the Strategy, and currently provides data to the program from the Woodside Atmospheric and Ambient Air Quality Monitoring Programs.

Atmospheric emissions from onshore processing (including at the Karratha Gas Plant and Pluto LNG) and nearby domestic gas users are currently managed under requirements of the WA Environmental Protection Act 1986 (namely Part IV Ministerial Approvals and Part V Operational Licences), State and Federal Aboriginal Heritage legislation, and the Federal EPBC Act.

The Karratha Gas Plant has a Cultural Heritage Management Plan and Air Quality Management Plan (AQMP) (prepared as part of the NWS Project Extension Proposal – refer EPA Report 1727). The AQMP outlines how air emissions from KGP (which receives gas from NRC) will be managed and monitored, and also proposes to manage potential impacts to Aboriginal rock art on the Burrup Peninsula in accordance with the MRAS (which is also a recommended condition of EPA Report 1727).

Noting the relatively small contribution of indirect atmospheric emissions from processing of NRC gas to the Murujuga airshed, outcomes of regulatory assessments of downstream facilities and the inconclusive evidence for any causal link between industrial air emissions and anthropogenic change to rock art on Murujuga, no impact is expected. Thus, the

risk of processing NRC gas at onshore facilities adversely impacting rock art on Murujuga is assessed as low and no impact classification assigned.

Conclusion

The impact and risk assessment for cultural features and heritage values has determined that the planned activities are unlikely to result in an impact greater than negligible (F) and unplanned activities are assessed to have a residual risk rating of moderate (or lower). Woodside will continue to consider new heritage information as it becomes available (See C 24.1).

Demonstration of ALARP

As marine ecosystems may hold both cultural and environmental value with cultural and environmental values intrinsically linked; in addition to the specific controls for cultural features and heritage values, the controls and performance standards outlined will further reduce potential impacts to environmental related values including marine species and habitats.

Control Considered	*Feasibility (F) & Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Adopted*
Apply a 'living heritage[74]' 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 24.1**
The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.	F: Yes CS: Substantial costs	Implementation of activities and associated controls to ALARP and acceptable levels supports the maintenance of cultural features and heritage values	Benefits outweigh cost/sacrifice	Yes **C 24.2**
Use of cultural heritage monitors on vessels to oversee implementation of controls protecting cultural values	F: No CS: Not feasible	Primary Installation Vessels are POB constrained with no ability to facilitate additional personnel	Not considered – control not feasible.	No

[74] Living heritage supports community and individual identity. Intangible cultural heritage is 'living heritage' that is inherited from ancestors and passed on to their descendants. It is comprised of many influences, including oral traditions, art, social practices, rituals and ceremonies, cultural knowledge and practices. It is transmitted from generation to generation and evolves in response to the environment. Woodside applies a 'living heritage' approach to its cultural heritage management. This includes ensuring that Traditional Custodians are given voice to identify interests, transmit information and express concerns. Woodside works with Traditional Custodians to support and follow appropriate cultural protocols, including calling to Country, conducting smoking ceremonies (in areas where this custom is appropriate) and undertaking cultural awareness. Woodside will collaborate and provide relevant information it holds to groups such as Heritage Management Committees where they are established.

Demonstration of ALARP				
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 24.3**
Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment that will cause new seabed disturbance in depths of <130m to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options.	Review of data by suitably qualified maritime archaeologist will inform potential exclusion or avoidance areas for seabed disturbance. Implementing this process will protect and minimise any physical impacts to underwater cultural heritage. Additionally, this process is not inconsistent with the Guidelines on the application of the Underwater Cultural Heritage Act 2018: Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW, 2024a).	Benefits outweigh cost/ sacrifice.	Yes **C 3.1**
Unexpected finds of potential Underwater Cultural Heritage sites/ features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in **Section 7.6**.	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 on the application of the Underwater Cultural Heritage Act 2018: Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters, expert advice and community expectations.	Benefits outweigh cost/ sacrifice.	Yes **C 3.2**
Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the Aboriginal and Torres Strait Islander	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefit outweighs cost/ sacrifice.	Yes **C 3.3**

Demonstration of ALARP				
Heritage Protection Act 1984 (ATSIHP Act).				
Relevant vessel crew will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure (**C 3.2**).	F: Yes. CS: Minimal cost.	Ensures workforce are suitably aware of legal and process requirements for managing cultural features and heritage values.	Benefits outweigh cost/ sacrifice.	Yes **C 3.4**
Unexpected finds of potential Underwater Cultural Heritage[75] sites/features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure	F: Yes CS: Costs of implementation	Allows management of new finds in accordance with legislative requirements, expert advice and community expectations.	Benefits outweigh cost/sacrifice.	Yes **C 2.2**
Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the PAA, 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 24.6**
Should it be identified that relevant cultural authorities may be affected in the unlikely event of a spill, Woodside will engage with those parties as appropriate and in alignment with the FSP.	F: Yes CS: Minimal	Engaging with relevant cultural authorities that may be impacted by a spill will allow the Traditional Custodians to identify areas of concern.	Benefits outweigh cost/sacrifice	Yes Adopted
ALARP Statement: On the basis of the impact and risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A), Woodside considers the adopted controls appropriate to manage the potential impacts and risks to cultural features and heritage values. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
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)[76] and unplanned activities are assessed to have a residual risk rating of moderate (or lower). The Petroleum Activities Program and the EMBA are not expected to have a significant impact (e.g. changes in population levels) on MNES including marine fauna with a First Nations connection with, or traditional use in nearshore areas. While the activity will occur on the Ancient Landscape Woodside has:

[75] 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.

[76] Noting that as the receptor sensitivity is high the impact significance level is Slight (E).

- Process to undertake desktop assessments by qualified professionals, using remote sensing techniques, to identify known or potential underwater cultural heritage where new seabed disturbance occurs in areas <130m depths and an unexpected finds procedure (refer to **Section 7.6**) will be implemented (C 2.2). Therefore, the activity is not inconsistent with *Underwater Cultural Heritage Guidance for Offshore Developments* and the *Guidelines to Protect Underwater Cultural Heritage* under the *UCH* Act.

In addition, Woodside has engaged with Traditional Custodians adjacent to the EMBA to understand the cultural features and heritage values that may occur and potential impacts from the activity.

The Program of Ongoing Engagement with Traditional Custodians (**Appendix H**: Program of Ongoing Engagement with Traditional Custodians) and the 'living heritage' management approach (C 24.1) have been developed to enable Woodside to manage cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians.

Further opportunities to reduce the impacts have been investigated above. The potential impacts and risks are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks to cultural features and heritage values to a level that is acceptable, if ALARP.

Key Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[77]

EPO	*Adopted Control(s)*	*EPS*	*MC*
EPO 30 No impact to cultural features and heritage values, as stated in **Table 4-19**, greater than a consequence level of F[78] from the Petroleum Activities Program **EPO 31** 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. **EPO 4** No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit[79].	**C 24.1** Apply a 'living heritage' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledge across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	**PS 24.1.1** Woodside will continue to give voice to Traditional Custodians to identify interests, transmit information and express concern through ongoing consultation as identified in **Section 7.10**	**MC 24.1.1** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified
		PS 24.1.2 Woodside will assess and where deemed practicable implement appropriate cultural protocols where requested by Traditional Custodians	**MC 24.1.2** Records demonstrate Woodside implemented cultural protocols as requested
	C 24.2 The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values. **C 24.3**	**PS 24.2.1** Consideration of cultural values/new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be	**MC 24.2.1** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified

[77] As marine ecosystems may hold both cultural and environmental value (see Section 4.9.4), 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 including marine species and habitats.

[78] Defined as F – Negligible, no lasting effect (< 1 month) Localised impact not significant to areas/items of cultural significance

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

Key Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[77]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	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.	prioritised and demonstrated through a written options analysis/ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes.	
		PS 24.3.1 All relevant marine crew have completed Project inductions that include information on cultural values, including tangible and intangible cultural heritage for awareness	**MC 24.3.1** Records demonstrate all relevant marine crew have completed inductions that include cultural material
	C 24.6 Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the PAA, under Sections 9,10,12 of the ATSIHP Act	**PS 24.6.1** Where an object or Significant Aboriginal Area is protected by a declaration under Section 12 or Sections 9/10 respectively of the ATSIHP Act, no work inconsistent with that declaration will be conducted for the duration of that declaration.	**MC 24.6.1** No non-compliances with any protection declarations relevant to the PAA, under Sections 9,10,12 of the ATSIHP Act
	C 2.2 Unexpected finds of potential Underwater Cultural Heritage[80] sites/features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure. **C 24.7** Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (C2.10) **C 2.4**	**PS 2.2.1** In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure**.**	**MC 2.2.1** No non-compliance with the Unexpected Finds Procedure.
		PS 24.7.1 Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure (C2.10) through an induction.	**MC 24.7.1** Records demonstrate vessel crew are made aware of potential to encounter UCH.
		PS 24.7.2 Report any finds of potential UCH in accordance with the Unexpected Finds Procedure, including to:	**MC 24.7.2** Records of potential UCH finds reported to relevant authorities and stakeholders.

[80] 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.

Key Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[77]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the ATSIHP Act	• DCCEEW underwater archaeology section • Australasian Underwater Cultural Heritage Database via DCCEEW	

7. IMPLEMENTATION STRATEGY

7.1 Overview

Regulation 22 of the Environment Regulations requires an EP to contain an implementation strategy for the activity. The implementation strategy for the Petroleum 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 WMS (see **Section 1.8**).

7.2 Systems, Practice and Procedures

All operational activities are planned and carried out in accordance with relevant legislation and internal environment standards, management measures (i.e., controls) identified in this EP and internal environment standards and procedures (**Section 6**).

The systems, practices and procedures that are implemented are listed in the Performance Standards (PS) contained in this EP. Document names and reference numbers may be subject to change during the statutory duration of this EP and is managed through a Change Register and update process.

7.2.1 Woodside Management System Operate Processes

Under the WMS Operate Activity (see **Section 1.8** for an overview of the WMS), there are four overarching processes; those directly relevant to the implementation of this EP and environmental management during the Petroleum Activities Program are described below (Operate Plant Process and the Maintain Assets Process).

7.2.1.1 Operate Plant

The objective of the Operate Plant Process is for production to be carried out in a safe, efficient, reliable and economic manner, and that all required process variables are within allowable limits. This is so that the potential for unplanned (accident/incident) events that may impact the environment are minimised.

The Operate Plant Process develops key activities to support ongoing production activities so that the facility is operated within the Basis of Design. The process also identifies required production routines, routine execution, recording of data gathered and formulation of remedial activities. The Operate Plant Process includes the Integrated Safe System of Work (ISSoW) system (described below).

In addition, the Operating Practice MSPS (M02) is in place to assure operating practices are in place, such that:

- integrity critical operating procedures are available, accurate, up to date, understood and used
- safe operating and technical integrity limits are defined, understood and the process is managed within these limits.

7.2.1.2 Integrated Safe System of Work

The ISSoW Procedure outlines the key activities required to achieve effective management of permit-controlled work on the facility. The ISSoW process is a management system for all work and

is a key element in ensuring the safety of personnel, protection of the environment and technical integrity of the facility.

Work within the facility 500 m PSZ and operations within the vicinity of the connected flowlines is controlled in accordance with ISSoW.

The ISSoW system takes a risk-based approach to activities, thus tasks with higher levels of risk are subjected to greater scrutiny and control. The ISSoW system also allows for low risk routine tasks to be carried out with adequate but minimal administration. The prime objective of ISSoW is to ensure work other than normal operations is properly planned, risk assessed, controlled, coordinated, and safely executed. It provides a methodical approach to identifying hazards, assessing risks, and creating and supporting permits to work and associated certificates.

In keeping with ALARP principles, this system is critical to ensuring the appropriate level of hazard identification and risk assessment is carried out for activities performed on the facility.

In addition, the Safe Work Control MSPS (M04) is in place to assure effective safe work control, permit to work and task risk management arrangements are in place and followed to control the risks arising from work activities.

7.2.1.3 Maintain Assets

The Maintain Assets Process aims to improve the reliability and availability of plant and equipment (which includes that required for safe operation) through well managed and planned execution of maintenance that promotes a proactive maintenance culture.

Maintenance, inspection and testing systems and procedures are in place to safeguard the integrity of the facility. The maintenance strategy for the facility is based on optimising safety, minimising environmental impact and maximising production. Maintenance practices used to establish well managed maintenances strategies, planned execution and improvement are described in the Maintenance of Assets Procedure.

A risk-based approach is used as the basis for establishing and prioritising inspection, maintenance and testing requirements at the facility. Equipment is assessed to establish equipment criticality with respect to the consequences and likelihood of equipment failure. This informs determination of appropriate maintenance and inspection activities. Maintenance activities are allocated risk rankings according to the criticality of equipment, so that high risk maintenance work orders are completed as a priority.

A computerised maintenance management system (CMMS) provides a database called SAP-PM that contains facility registers, equipment details, spare parts data and associated planned maintenance tasks. This system is used to plan, monitor and record maintenance activities. The system provides a variety of reports that enable monitoring and assessment of maintenance activities.

SCE Technical Performance Standards identify SCEs and associated assurance activities. These activities are identified in the CMMS and given the appropriate priority (Technical Integrity status). Refer to **Sections 2.7.5** and **7.2.5** for more detail on SCE Technical Performance Standards and how they differ from EPSs required by the Environment Regulations. SCE Technical Performance Standards form a key component in the processes and systems implemented by Woodside to maintain safety and environment critical plant and equipment.

In addition, the Maintenance and Inspection MSPS (M03) is in place to assure that the necessary inspection and maintenance requirements are identified and carried out to maintain the integrity of SCEs and SCCs.

7.2.2 Process Safety Management

So that Woodside protects the safety, security and health of its employees, contractors, the environment and assets, Woodside has adopted the Energy Institute's Process Safety Management (PSM) framework within its Process Safety Management Procedure which sets out a disciplined framework for managing the integrity of systems and processes that handle hazardous substances over the production (and exploration) lifecycle. It deals with the prevention and control of events that have potential to release hazardous materials and energy.

PSM consists of four main focus areas. Each focus area contains a number of PSM requirements that define key aspects required so that that PSM is integrated through the organisation. There are twenty PSM requirements. The focus areas and requirements are shown in **Figure 7-1**.

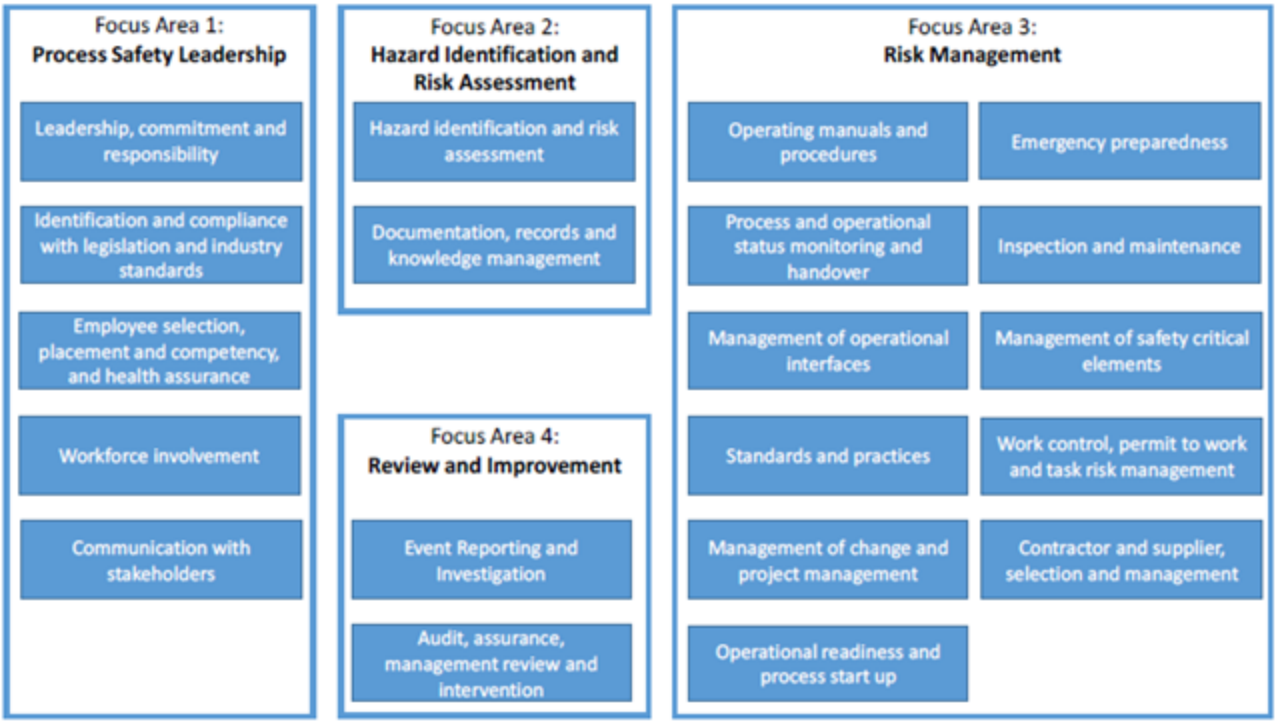


Figure 7-1: Process safety management focus area

7.2.2.1 Woodside Safety Culture Framework

Woodside's 'Our Safety Culture' framework (shown in **Figure 7-2**) promotes a strong HSE culture and is a key enabler for effective process safety management. This framework outlines the expected behaviours for everyone including supervisors and managers/executives, and is openly discussed as part of inductions, training and development.

Figure 7-2: Woodside 'Our Safety Culture' Framework

7.2.3 Woodside Invasive Marine Species Risk Assessment Process

7.2.3.1 Objective and Scope

To minimise the risk of introducing IMS as a result of the Petroleum Activities Program, all applicable vessels and immersible equipment will be subject to Woodside's IMS risk assessment process (unless exempt as outlined below).

The objective of the risk assessment process is to identify the level of threat a contracted vessel, or immersible equipment poses if no additional risk reduction management measures are implemented. This allows Woodside (and its contractors) to apply management options that are commensurate to the identified level of risk.

In context of the activities specified in **Section 3**, the IMS risk assessment process does not apply to:

- Vessels or immersible equipment that do not plan to enter the IMS Management Area (IMSMA)[81] or PAA is defined in environmental approvals;
- 'New build' vessels launched less than 14 days prior to mobilisation;
- Vessels or immersible equipment which have been inspected by a suitably qualified IMS inspector who has classified the vessels or immersible equipment as acceptably low risk no more than 14 days prior to mobilisation; and
- Locally sourced vessels or immersible equipment from within the Pilbara locally sourced zone[82]. Vessels, or immersible equipment are defined as locally sourced when the same

[81] MSMA is based on current legal framework and includes all nearshore waters around Australia, extending from the lowest astronomical tide (LAT) mark to 12 nm from land (including Australian territorial islands). The IMSMA also includes all waters within 12 nm from the 50 metre depth contour outside of the 12 nm boundary (i.e., Submerged reefs and atolls).

[82] The Pilbara Zone includes Port, nearshore and offshore movements between Exmouth and Port Hedland (excluding high environmental value areas, World Heritage Areas, Commonwealth Marine Reserve Sanctuary Zones and State Marine Management Areas and Marine Parks).

supply facilities/port have been used since their last IMS inspection, full hull clean in dry dock or application of antifouling coating (AFC[83]).

7.2.3.2 Risk Assessment Process

Woodside's IMS risk assessment process was developed with regard to the national biofouling management guidelines for the petroleum production and exploration industry and guidelines for the control and management of a ships' biofouling to minimise the transfer of invasive aquatic species (IMO Guidelines, 2011).

To effectively evaluate the potential for vessels and immersible equipment to introduce IMS, a risk assessment process has been developed to score and evaluate the risk posed by each support vessel, or immersible equipment planning to undertake activities within the IMSMA/ Operational Area. The risk assessment process considers a range of factors, as listed in **Table 7-1** and **Table 7-2**.

The IMS risk assessments will be undertaken by a trained environment adviser who has completed relevant Woodside IMS training or by a qualified and experienced IMS inspector. A QA/QC process is implemented for all Woodside conducted IMS risk assessments where a secondary trained environment adviser verifies the assessment to minimise the risk of misapplication and errors within the risk assessment process.

Table 7-1: Key factors considered as a part of the risk assessment process for vessels

Factors	Details
Vessel type	The risk of IMS infection varies depending on the type of vessel undertaking the activity. A higher risk rating is applied for more complex, slow-moving vessels (e.g., dredges) in comparison to simple vessels (e.g., crew transfer vessel).
Recent IMS inspection and cleaning history, including for internal niches	In the case of biofouling on external hull niches, different risk ratings are applied dependant on whether out-of-water or in-water IMS inspections by qualified IMS inspectors and cleaning (if required) have been undertaken prior to contract commencement. If an IMS inspection (and clean if required) has not been undertaken in the past six months (from the time of contract commencement), the highest risk factor is applied. The risk factor then lessens for vessels as the time between inspection and mobilisation reduces.
Out of water period before mobilisation	A risk reduction factor can be applied for vessels that are hauled out and then mobilised as deck cargo or by road during mobilisation, therefore becoming air dried over an extended period. Risk reduction factor increases with exposure time out of water.
Age and suitability of AFC at mobilisation date	AFC manufacturers provide a range of coatings, each designed to avoid premature coating failure if it is correctly applied and matched to the vessel's normal speeds and activity profile (i.e., proportion of time spent stationary or below three knots), and its main operational region (i.e., tropical, sub-tropical temperate). If the AFC type is deemed to be unknown, unsuited or absent, the highest risk value is applied. If the AFC type is suitable the risk factor applied reduces with age since application.
Internal treatment systems	A risk reduction factor applied if the vessel has an internal biological fouling control system in place at the time of assessment, or evidence of manual dosing.

[83] Vessels and immersible equipment can still be classified as locally sourced even if the AFC application occurred in a different port provided the amount of time between AFC application and departure to the locally sourced area (i.e., period of time in waters <12 nm/50m water depth) did not exceed consecutive 7 days or the period of time the vessel or immersible equipment has spent within the locally sourced zone exceeds 1 year (i.e., the risk of introducing a species from a different location has already passed).

Factors	Details
Vessel origin and proposed area of operation	Differing risk ratings are assigned in relation to the climatic relationship between the vessel's origin and the proposed climatic region of the proposed area of operation. Highest risk rating is applied to similar climatic regions.
Number of stationary / slow speed periods >7 days	A risk factor is calculated based on the number of 7-day periods that the vessel has operated at stationary or at low speed (less than three knots) in port or coastal waters which is any waters less than 50 metres deep outside 12 nautical miles from land or any waters within 12 nm of land. The greater the number of periods, the higher the risk factor applied.
Region of stationary or slow periods	A further multiplier is applied depending on the location of the stationary/slow speed periods. The highest risk rating applied if the stationary or slow speed periods occurred within ports or coastal waters of the same climatic region.
Type of activity – contact with seafloor	The potential for the introduction of IMS varies on the planned vessel activity taking place. Those activities that come in contact with sediments and thus have the potential to accumulate and harbour IMS in areas such as hoppers (dredges) and spud cans (drilling rigs) are considered to have a greater risk of infection.

Table 7-2: Key factors considered as a part of the risk assessment process for immersible equipment

Factors	Details
Region of deployment since last thorough clean, particularly coastal locations	Climatic region of use since last overhaul, thorough cleaning or prolonged period out of water (>28 day). Highest risk rating is applied to similar climatic regions. Activities occurring in nearshore areas (less than 50 metres deep and/or within 12 nautical miles from land) are given the highest risk rating.
Duration of deployments	Maximum duration of deployment (maximum time in water) since last overhaul or thorough cleaning. The longer the period of immersion the higher the risk rating applied.
Duration of time out of water since last deployment	A further risk reduction factor can be applied for immersible equipment that has been out of the water for an extended period.
Transport conditions during mobilisation	If the equipment is stored in damp conditions then a high risk factor is applied, while if equipment is stored in dry and well ventilated (low humidity) conditions then a low risk factor is applied.
Post-retrieval maintenance regime	A risk reduction factor is applied if the equipment/item of interest is routinely washed, cleaned, checked and/or dissembled between project sites, while a higher risk rating is applied where no routine cleaning occurs.

Following implementation of the risk assessment process, vessels and/or immersible equipment are classified as one of three risk categories, as defined below:

- 'Low' – Low risk of introducing IMS of concern and hence no additional management required, or management options have been applied to reduce the risk.
- 'Uncertain' – Risk of introducing IMS is not apparent and as such the precautionary approach is adopted, and additional management options may be required.
- 'High' – High risk of introducing IMS means additional management options are required prior to this vessel mobilising to the Operational Area.

Following the allocation of a 'low' risk rating for a vessel or immersible equipment, the information provided by the vessel operator for the purposes of risk assessment must be confirmed prior to mobilisation. For vessels or equipment classified as posing an 'uncertain' or 'high' theoretical risk, a range of management options are presented to reduce this theoretical risk to acceptable levels and achieve a low risk status. These management options have been developed with the intention of

reducing IMS risk to levels that are as low as reasonably practicable (i.e., ALARP). It is a flexible approach that allows for a range of management actions to be tailored for a specific vessel movement. These will be assessed on a case-by-case basis and may include:

- Having a suitably qualified and experienced IMS inspector inspect (desktop, in-water or dry dock) to verify risk status; where practicable, the inspection shall occur within seven days (but not more than 14 days) prior to final departure to the PAA;
- Applying in-water or dry dock cleaning of the hull and other niche areas, typically applied where the risk assessment outcome is High risk driven by the age of the AFC on the vessel and its time spent in similar climatic region ports;
- Treating vessels. internal seawater systems, typically applied in isolation for vessels with AFC applied to their hull within the last 12 months and where subsequent assessment through the process achieves a Low risk rating;
- Limiting the duration that the vessel spends within the IMSMA to a maximum of 48 hours (cumulative entries); applicable for Uncertain risk vessels only; and
- Rejecting the vessel.

Support vessels and immersible equipment are required to be a low risk of introducing IMS prior to entering the Operational Area.

7.2.4 Risk Management

Risk management processes and practices are applied on an ongoing basis to design, production and maintenance activities at the facility to manage risks to personnel, assets and the environment.

Potential environmental consequences and impacts from the facility are risk assessed and controlled in accordance with the Woodside risk management processes described in **Section 2** of this EP (Environmental Risk Management Methodology).

The results of the facility ENVID are described in **Section 6** and in the facility 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 facility.

A number of other risk management tools and techniques are used by the facility to manage environmental and other risks on a routine basis during operational, maintenance and inspection tasks. Examples include:

- The processes outlined in **Section 2.2;**
- Risk management tools including: ISSoW tools; e.g., Hazard Identification and Risk Assessments, Level 2 Risk Assessments, Operational Risk Assessments, the technical MoC system and Step Back 5 × 5; and
- Integrity review studies, HAZIDs and Hazard Operability studies.

These tools, risk and integrity management practices are described further in the NRC Safety Case, WOMP, and the Control of Operational Risk Procedure.

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 2.2.1**), 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.

7.2.4.1 Management of Risks – Contracting and Procurement

Suppliers and contractors play a significant role in meeting the resource needs of Woodside's operations, including the facility operations. Effective management of environmental risks in contracts is achieved by setting clear expectations and managing environmental risks throughout the duration of the contract. Environmental risks in contracts are managed under the Contracting and Procurement Procedure supported by the Health, Safety and Environment in Contracting Guideline. The guideline provides a risk-based approach to contractor selection and management and is aligned with 'HSE Management – Guidelines for Working Together in a Contract Environment' (International Association of Oil and Gas Producers, Report No. 423).

The Engineering Standard: Quality Requirements for Supply of Products and Services defines specific quality requirements for engineering contracts and purchase orders. The specified quality control requirements in the Standard are required to be complied with as applicable to the scope of supply.

7.2.4.2 Management of Risks – Subsea Activities

Subsea activities are managed in line with the Subsea and Pipelines Integrity Management Procedure which defines the practices and technical requirements that must be applied to deliver and safeguard integrity of the subsea equipment and pipelines during the facility lifecycle. It provides the relationship between the PSM Framework (including management of change) and Subsea and Pipelines Group services processes.

IMMR activities are managed under the Manage IMMR Work Procedure. Risk assessments are conducted as required under this procedure.

These requirements are supported by implementation of the Subsea Construction and Inspection, Maintenance and Repair Environment Screening Questionnaire tool. The screening questionnaire is used to understand the scope of the activity, potential environmental impact and if additional regulatory approvals are required. To achieve this, the questionnaire captures key project information such as seabed disturbance, chemical use and waste. This information is used by an environment focal point to determine if further assessment is required. For projects that have the potential for environmental impact, an assessment is undertaken against this EP and other Woodside environmental requirements. If determined by the Subsea and Pipeline Environment Screening Questionnaire process, an EP MoC review (as per **Section 7.2.4.13**) is undertaken to confirm if the level of environmental risk warrants revision and resubmission of an EP.

Key environmental requirements and regulatory commitments are communicated to project teams and incorporated into key project documentation where applicable and required (i.e., not addressed via existing Woodside practices).

7.2.4.3 Management of Risks – Major Projects

Major projects are required to follow the Appraise and Develop Management Procedure and the Investment Management Framework. This procedure defines the requirements to deliver a commercially valuable production facility or modify to an existing facility. The process workflow requires integration of work from various functions utilising their people and processes, including Environment, for example HSE philosophy and regulatory approval requirements.

These requirements are supported by implementation of the Brownfields Environment Screening Questionnaire tool. The screening tool is used to determine if a project has the potential for

environmental impact or requires additional regulatory approvals. For projects that have the potential for environmental impact, an environmental focal point is assigned and the risks and impacts assessed against the facility EP and other Woodside environmental requirements.

Key environmental requirements and regulatory commitments are communicated to project teams and incorporated into key project documentation where applicable and required (i.e., not addressed via existing Woodside practices).Where it is identified that the project scope has the potential to result in modification or change to the facility description provided in the EP, or where potential new environmental risks or impacts or increases in an existing environmental risk or impact are identified, an EP MoC review (as per **Section 7.2.4.13**) is undertaken to confirm if the level of environmental risk warrants revision and resubmission of an EP.

7.2.4.4 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 Process Safety Management Procedure.

In addition, wells are required to have a regulator accepted Well Operations Management Plan to demonstrate that well integrity risks are managed to ALARP levels. Wells tied back to the facility are managed under the NRC Hub WOMP.

Management of operating wells can be formally transferred from Operations to the Global Wells and Seismic (GWS) Function for activities such as well intervention and workover. Where activities are undertaken by the GWS Function, 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.

7.2.4.5 Management of Risks – Marine Services

Woodside's Marine Services Function provides a platform for the conduct of safe and efficient Marine Operations across Woodside through the Marine Services Management. A set of procedures that support vessel assurance and management (including HSE and quality [HSEQ] 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 7.8.2**.

Vessel masters are required to request clearance from the facility OIM delegate prior to entering the 500 m PSZ.

7.2.4.6 Management of Risks – Emissions and Energy Management

Emissions generation and energy use is managed in line with the GHG Emissions and Energy Management Procedure which defines the minimum mandatory requirements to manage and deliver continuous improvement in energy efficiency and reduction in GHG emissions. The procedure supports the implementation of the Climate Policy and aligns with the requirements of the Environmental Performance Procedure, applicable to assets in Operate phase. It supports the "operate out" component of limiting net emissions, as shown in the Woodside Climate Policy.

Implementation of the GHG Emissions and Energy Management Procedure assists in meeting external expectations, such as Woodside's 2025 (-15%) and 2030 (-30%) emissions reductions targets and aspiration to be net zero by 2050. It also maintains consistency with the principles of current corporate initiatives, such as the Zero Routine Flaring Initiative for oil assets and the Methane

Guiding Principles. These initiatives aim to improve methane emissions inventorisation, methane materiality assessments, evaluation, reduction implementation and increased transparency through reporting. The Woodside Flare Framework is an optional WMS tool that seeks to improve awareness of flaring-related issues and influence for reduced flaring. The GHG Emissions and Energy Management Procedure links to the annual review of opportunities to improve energy performance through identification and evaluation as described in the Production Optimisation and Opportunity Management Procedure. It also requires measurement, analysis and communication of energy performance across the Operations Division and consideration of actual or potential impacts to energy efficiency in Woodside decision making, such as management of change, operational decisions, issue resolution options analysis and facility optimisation plans.

The Environmental Performance Procedure requires that assets measure, monitor or estimate direct air and GHG emissions, and that such emissions and energy intensities are minimised to ALARP. Further details including performance standards are defined in **Section 6.6.7**.

7.2.4.7 Production Optimisation and Opportunity Management

Woodside's Production and Opportunity Management Procedure outlines the process for identification, prioritisation and management of production opportunities that maximise production revenue or reduce emissions intensity across Woodside operated assets. Opportunities are identified throughout the year in various meetings, forums and teams. In addition, formal opportunity identification takes place through annual workshops, which complement the identification of improvement opportunities. These opportunities are prioritised and managed according to the workflow shown in **Figure 7-3**.

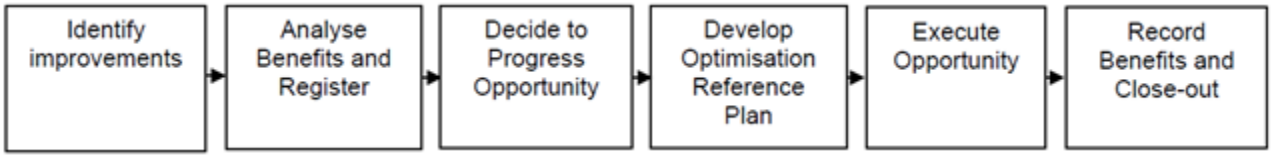


Figure 7-3: Opportunity management workflow

Production opportunities are evaluated and progressed, based on value and confidence of return, within the constraints of technical feasibility, cost and other factors. Implemented opportunities are validated and recorded before close out.

7.2.4.8 Flare Target Setting

In demonstrating the risks and impacts relating to flaring have been reduced to ALARP, flare targets for the facility are set annually in accordance with Woodside's Greenhouse Gas, Energy and Flare Target Setting Guideline. Targets are estimated based on operating experience and forecast activities; e.g., shutdowns. Consideration is also given to the flaring estimates contained within this EP.

The flare target is tracked against flare performance through the year. Where achieving a flare target is in question, an internal flare target deviation is developed, which requires an ALARP justification. A flare target deviation considers EP flare estimates. If estimate is likely to be exceeded, an EP management of change assessment is undertaken to determine if a revision and resubmission is required.

7.2.4.9 Management of Risks – Indirect Emissions Management

As stated in the Climate Policy, Woodside's objective is to thrive in this energy transition as a low cost, lower carbon energy provider. To support this policy Woodside undertakes the following measures:

- Set science-based[84] near, mid, and long-term net emissions reduction targets that are consistent with Paris-aligned[85] scenarios, covering equity scope 1 and 2 emissions, both operated and non-operated.[86]
- Develop and operate 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.
- Invest 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.
- Publish transparent climate-related disclosures aligned to the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) or other recognised global reporting standards.
- Align our advocacy to the principles of this Climate Policy.

These measures will be amalgamated into a cohesive program to monitor market developments related to the contribution of hydrocarbons in the energy transition and support suppliers and customers to reduce their GHG emissions. The program will be managed by Woodside's Climate & Sustainability Team and implementation will be in Q1 2024. The progress against each of the measures will be tracked and reported, as part of Woodside's climate-related disclosures.

7.2.4.10 Annual Review

The measures proposed will be Woodside Corporate initiatives targeting indirect emissions which are attributable to production from Woodside operated facilities as a whole. Via the annual review process and consideration of the controls, if they are deemed to be effective at a Corporate implementation level then it will also be deemed that specific impacts and risks at an Asset

[84] 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.

[85] 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.

[86] 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.

contribution level (i.e. proportion attributable to NRC production) is also being managed appropriately.

The review process will also undertake an assessment of the NRC attributable indirect emissions and consider the EP indirect emission estimates (Table 6-10 and Table 6-11 in Section 6.6.7). This assessment will include both a review of the total Co_2e estimates and also the methods used to derive the estimates. If the estimate is exceeded, an EP management of change assessment (see Section 7.2.4.13) is undertaken to determine if a revision and resubmission is required.

7.2.4.11 Management of Human Factor Related Risks

The term 'human factors' is used to describe the consideration of people as part of complex systems. Woodside defines 'human factors' as follows: 'human factors uses what we know about people, organisation and work design to influence performance'.

As outlined in **Section 6.7.9**, human factors can contribute to MEEs, or result in failure or degradation of the controls in place to protect against MEEs. The WMS includes a number of procedures designed to manage human factors related risks and prevent incident causation. Change Management

Woodside's Change Management Procedure describes Woodside's requirements for change management at Woodside owned or controlled operations/sites.

Change management is used where there is no existing approved business baseline, such as a process, procedure or accepted practice, or where conformance with an approved baseline is not possible or intended; for example, due to equipment fault or failure or a recently discovered issue which will take time to rectify. Change management is also used when the baseline is changed (e.g., the process is modified). It applies to management of temporary, permanent, planned or unplanned change encompassing one or more of:

- plant (equipment, plant, technology, facilities, operations or materials)
- projects (budget, schedule)
- people (organisation structure, performance, roles)
- process (WMS content, processes, procedures, standards, legislation, information).

Woodside's change management process hierarchy is depicted in **Figure 7-4**. The hierarchy has been developed with sub-processes to address the different types of change performed at Woodside.

Figure 7-4 Change Management Hierarchy

To help manage the day-to-day operation of the facility, Woodside has developed a Golden Safety Rules Booklet, which provides a summary of mandatory requirements for safety in the workplace and includes guidance for managing changes that have a Health, Safety, Integrity and/or Environment impact.

7.2.4.12 Technical Change Management

Technical changes within the Operations Division are managed using the Management of Change – Assets Procedure. The objective of the procedure is to ensure HSE risks associated with both realised and potential changes, including any failure to meet the facility SCE Technical Performance Standards, are identified, assessed and reduced to ALARP (**Section 7.2.5** provides further information on management of SCE Technical Performance Standards).

Assessed changes must be recommended, agreed and decided upon based on the assessed current level of risk, as defined by Woodside's Technical Decision Authority matrices.

The management of change requirements contained in the Process Safety Management Procedure and Management System Performance Standard M05 Management of Change are considered when conducting any changes with the potential to impact process safety.

The Engineering Management Procedure specifies key requirements of engineering related changes, and requires that engineering Technical Decisions are agreed, recommended and decided at the appropriate engineering authority level according to the risk. Change management and risk assessment include consideration of applicable legislation/regulation.

Change is also managed under management system requirements set out as part of major projects (Brownfields), wells integrity, subsea and pipelines integrity management and marine management system. Change management includes consideration of regulatory requirements, managed in accordance with the Regulatory Compliance Management Procedure.

In addition, the Management of Change MSPS (M05) is in place to assure process safety risks arising from change (temporary and permanent) are systematically identified, assessed and managed.

7.2.4.13 Environment Plan Management of Change and Revision

Management of changes are managed in accordance with Woodside's Environmental Approval Requirements Australia Commonwealth Guideline. Management of changes relevant to this EP, concerning the scope of the activity description (**Section 2.10**) including: review of advances in technology at stages where new equipment may be selected such as vessel contracting; changes in understanding of the environment, DCCEEW EPBC Act listed threatened and migratory species status, Part 13 statutory instruments (recovery plans, threat abatement plans, conservation advice, wildlife conservation plans) and current requirements for AMPs (**Section 4.8**); and potential new advice from external stakeholders (**Section 5**), will be managed in accordance with Regulation 39 of the Environment Regulations.

Risk will be assessed in accordance with the environmental risk management methodology (**Section 2.8**) to determine the significance of any potential new environmental impacts or risks not provided for in this EP. Risk assessment outcomes are reviewed in compliance with Regulation 38 and 39 of the Environment Regulations.

Minor changes where a review of the activity and the environmental risks and impacts of the activity do not trigger a requirement for a formal revision under Regulation 38 or 39 of the Environment Regulations, will be considered a 'minor revision'. Minor administrative changes to this EP, where an assessment of the environmental risks and impacts is not required (e.g., document references,

phone numbers, etc), will also be considered a 'minor revision'. Minor revisions as defined above will be made to this EP using Woodside's document control process. Minor revisions will be tracked in an MOC Register to ensure visibility of cumulative risk changes, as well as enable internal EP updates/reissuing as required. This document will be made available to NOPSEMA during regulator environment inspections.

7.2.4.14 Oil Pollution Emergency Plan Management of Change

Relevant documents from the OPEP will be reviewed in the circumstances of:

- Implementation of improved preparedness measures;
- A change in the availability of equipment stockpiles;
- A change in the availability of personnel that reduces or improves preparedness and the capacity to respond;
- The introduction of a new or improved technology that may be considered in a response for this activity;
- To incorporate, where relevant, lessons learned from exercises or events; and
- If national or state response frameworks and Woodside's integration with these frameworks changes.

Where changes are required to the OPEP, based on the outcomes of the reviews described above, they will be assessed against Regulation 38 and 39 to determine if EP, including OPEP, resubmission is required (see **Section 7.2.4.13**). Changes with potential to influence minor or technical changes to the OPEP are tracked in management of change records and incorporated during internal updates of the OPEP or the five-yearly revision.

7.2.5 Management of Safety and Environment Critical Element Technical Performance Standards and Management System Performance Standards

7.2.5.1 Management System Performance Standards

Woodside ensures safety critical management processes function as required through the application of management system performance standards. MSPS are developed and owned at non facility-specific level (i.e., pan Woodside) and include assurance checks for the key requirements of the applicable management system.

Individual facilities demonstrate conformance against the MSPS through the conduct of reviews. Non-conformances against an MSPS are internally managed in accordance with the WMS.

7.2.5.2 Safety and Environment Critical Element Technical Performance Standards

An SCE is defined by Woodside as a hardware barrier, the failure of which could cause or contribute substantially to, or the purpose of which is to prevent or limit the effect of a MAE/MEE, or Process Safety Event.

Woodside identifies/develops, implements, monitors/assures and verifies/optimises SCEs by applying SCE technical Performance Standards as described in the Safety and Environment Critical Element (SCE) Management Procedure. Key elements of the procedure are summarised in **Table 7-3**.

Table 7-3: Safety and environment critical element management procedure summary

Identify/Develop	**Identify SCE** – SCEs must be identified from the facilities PSRAs (e.g., Formal Safety Assessments) (**Section 2.2**). The identification of SCEs for which Performance Standards are required are part of the formal safety and environmental risk assessment processes. Woodside's Global Performance Standards (based on industry and Woodside Standards) should be used for preliminary selection of SCEs. **Complete Engineering Design Studies** – Engineering design studies must be completed to demonstrate that SCE Performance Criteria specified in the global Performance Standard and/or determined by PSRA will be met by the facility design, allowing for normal SCE degradation in operation. The studies must establish the testing and inspection tasks required to assess performance against the criteria. The scope and frequency of SCE Assurance Tasks are guided by the Global Performance Standard and may require designated Engineering Design Studies. Studies should include Reliability Centred Maintenance, Risk Based Inspection and Safety Instrumented Function studies to determine the Assurance Task scope and frequencies, RBI plans, and classification and implementation requirements for instrumented safeguarding. **Develop Performance Standards** – Facilities must develop Performance Standards for all SCEs by: • selecting the applicable Global Performance Standard (including Assurance Tasks) • considering facility specific requirements and applicable regulatory requirements • adding the specific data from the facility Engineering Design Studies and PSRA to compile scope and frequency of SCE assurance activities.
Implement	**Identify SCE in Asset Register** – SCEs must be uniquely identified on the asset register and assigned Performance Standard flags. **Develop Testing, Inspection and Maintenance Programs** – SCE assurance tasks are developed into maintenance procedures. **Implement Testing, Inspection and Maintenance Programs** – SCE testing, inspection and maintenance requirements must be implemented in the CMMS (**Section 7.2.1.3**).
Maintain/Assure	**Execute Testing, Inspection and Maintenance Programs** – On completion of SCE assurance tasks, results must be recorded with all relevant detail, assessed for conformance with the Performance Criteria and any follow-on correction work identified. **Conduct Fitness for Service (FFS) Assessment** – In some instances, an engineering FFS assessment may be required to determine whether equipment has failed its performance standard requirements; e.g., assessment of corrosion defects following inspection of piping. Detailed results of FFS assessment may be recorded out of CMMS. **Response to SCE Failure** – SCE failure (technical Performance Standard non-conformance) is a failure to achieve the given Performance Criteria. SCE failures must be managed in accordance with a structured review process. This process may require the application of the facility MOPO which provides prescriptive guidelines to be followed in the event of a reduction in the performance of an SCE, or managed in accordance with the Management of Change – Assets Procedure (**Section 7.2**). **Internal Reporting** – SCE failure/damage and SCE demands must be reported in accordance with the Health Safety and Environment Event Reporting and Investigation Procedure (**Section 7.11.4**). **External Reporting** – External notification obligations for SCE failure/damage must be understood (i.e., based on local regulatory requirements). External communications must be in accordance with the health safety and environment event reporting and investigation procedure (**Section 7.11.5**). **Manage and Analyse Results** – The results from assurance tasks must be accurately recorded to support data analysis. Analysis will enable appropriate action to be taken to minimise future failure recurrences, and enable assessment of overall system performance and reliability to verify SCE effectiveness in revealing failures and to allow predictive maintenance.
Verify/Optimise	**Review SCE Performance** – SCE performance reviews must be conducted to ensure requirements for maintaining SCE performance are being met. **Manage Change** – Any change to the Performance Standards must be conducted in accordance with the Change Management Procedure.

SCE Technical Performance Standards are a statement of the performance required of an SCE (e.g., functionality, availability, reliability, survivability), which is used as the basis for establishing agreed assurance tasks and managing the hazard. An assurance task is an activity carried out by the operator to confirm that the SCE meets, or will meet, its SCE technical Performance Standard. Examples of assurance tasks include inspection routines, maintenance activities, test routines, instrumentation calibration and reliability monitoring.

These assurance tasks are identified in the CMMS, flagged against their associated technical Performance Standard, and given the appropriate priority. Management systems are in place to manage the completion of maintenance including that required for Technical Integrity assurance.

Events where the SCC/SCE have not met their specified performance criteria must be managed in accordance with a structured review process. This process may require the application of the facility Manual of Permitted Operation (MOPO) which provides prescriptive guidelines to be followed in the event of a reduction in the performance of an SCE in specific defined circumstances; or, if the MOPO does not cover the event, according to procedures for the assessment and management of operational risk.

Internal notification of SCC failures must be made in accordance with maintenance management workflows. Failures to meet a Facility Performance Standard occur where SCC events lead to the functional objectives (goal and/or key requirement statements) of the facility Performance Standard for the SCE not being met (i.e., lost or unavailable), taking into account any redundancy inherent within the SCE. These events are reported in the Event Reporting Database as potential SCE Failure to Meet Facility Performance Standard Events.

These are internally reported as Hazard Events. Where ‘Failure to meet a Facility Performance Standard’ leads to a loss of hydrocarbon containment, or a release of energy, it is internally reported (and externally where relevant) as a Loss of Primary Containment or Environmental Spill event, depending on the nature of the release.

Additionally, confirmed “Failure to meet a Facility Performance Standard’’ events for the SCEs identified in the MEE bowties may equate to a breach of EPOs and/or EPSs. The review to identify such events for external reporting considers whether the hazard event is relevant to environmental SCE functional objectives (goal and/or key requirements) of the SCE Facility Performance Standard and whether the event poses a risk to achieving EPOs and EPSs. The WMS Regulator Event Reporting Guideline provides additional information regarding external SCE related reporting obligations.

There may also be planned changes/deviations from SCE Technical Performance Standards, these are managed via procedures for the assessment and management of operational risk, and endorsed in accordance with the engineering management procedures (described further within **Section 7-4**). This management process ensures risks (including environment) are managed so that the planned change/deviation does not result in unacceptable impact or risk, remains ALARP and regulatory requirements are met.

7.3 Woodside’s Decommissioning Framework

Decommissioning is a routine, planned activity for the offshore oil and gas industry. Current best practice for decommissioning includes:

- designing for decommissioning during the development phase of projects/facilities;
- removing property, equipment and infrastructure, such as a facility or a pipeline, and plugging wells associated with a petroleum activity;

- assessing decommissioning options and opportunities during the operational life of the facility leading up to cessation of production;
- selecting, developing and planning the selected decommissioning option;
- executing decommissioning plans; and
- restoring the marine environment.

This is aligned with Section 572 (3) of the OPGGS Act, which requires titleholders to remove property from the title area when it is neither used, nor planned to be used, in connection with the operations. Planning for complete removal is the base case for offshore decommissioning operations. Section 572 (7) and Section 270 (3) of the OPGGS Act provide scope for in situ decommissioning or other arrangements to be made where it can be demonstrated that the risks and impacts are ALARP and acceptable. If complete removal or other arrangements for decommissioning are planned, the proposed alternative presented in an EP must comply with all other Acts and legislation.

7.3.1 Decommissioning in Operations

Asset specific decommissioning plans are typically developed prior to cessation of production. Planning includes redundant infrastructure as well as structures coming to the end of production and, decommissioning critical systems to enable, as a base case, full removal. Appropriate maintenance plans are developed and implemented to ensure decommissioning critical systems meet the requirements to facilitate removal.

7.3.2 Facility Decommissioning Planning

Decommissioning planning generally commences two (2) to 10 years prior to cessation of production (**Figure 7-5**). The timeframe selected for decommissioning planning depends on the complexity of the facility and infrastructure requiring decommissioning.

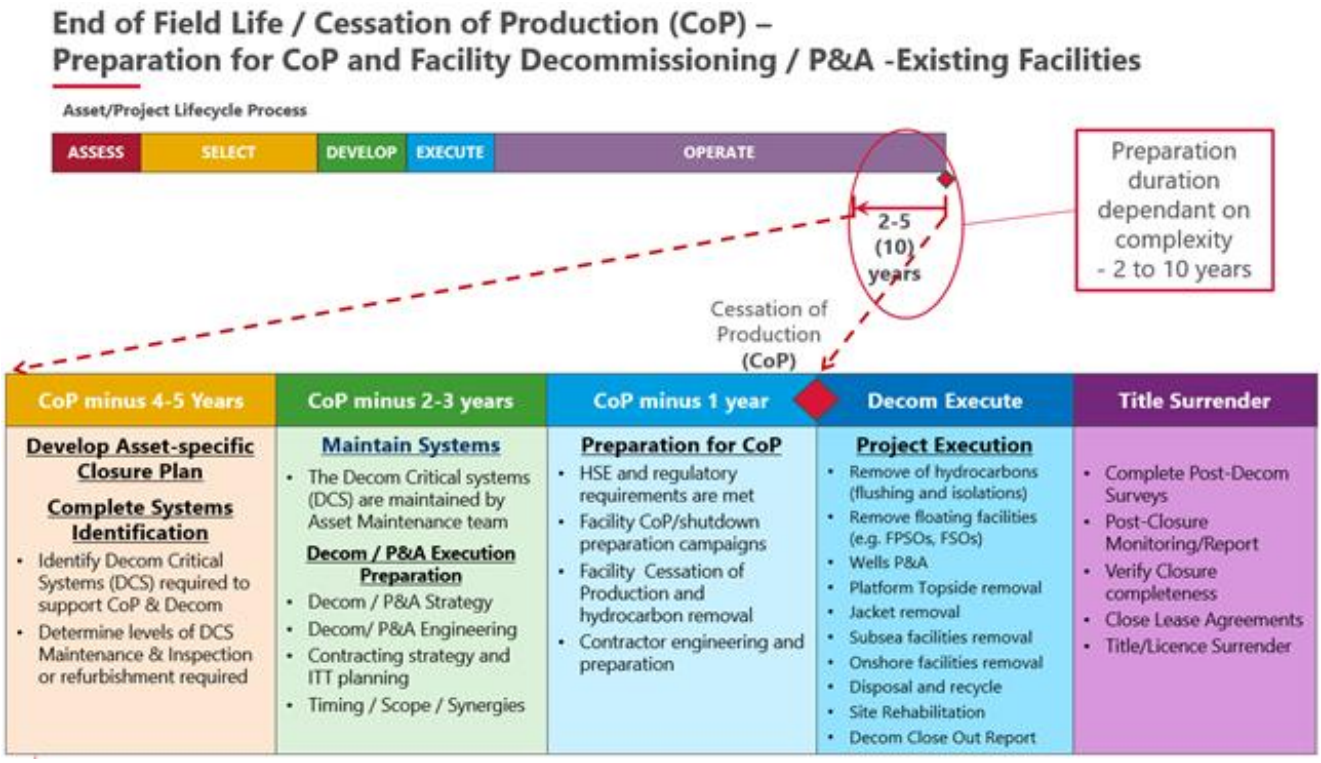


Figure 7-5: Woodside's process for decommissioning planning

7.3.3 Inventory of Property within the title area

An inventory of property located within petroleum title WA-1-L and associated pipeline licenses in Commonwealth water, is provided below in **Table 7-4**. For a more detailed breakdown of key subsea infrastructure of the NRC and Persephone field see **Table 3-3**.

Table 7-4: Inventory of Woodside infrastructure within WA-1-L

Item	Description	Status	Decommissioning Phase
WA-1-L			
Platform Wells			
30 platform wells	Production wells, drilled from and produced to NRA	29 of the 30 platform wells are maintained for production. 1 platform well is suspended.	Future (~10 years+)
Subsea wells			
2 wells (PSA01, PSA-02)	Subsea production wells in Persephone field	Maintained for production	In planning (~5 years)

Subsea infrastructure - NRC and Persephone			
~7 km umbilical	Production subsea infrastructure	Maintained for production	In planning (~5 years)
~7 km flexible flowline			
4 x rigid spools			
Trunklines			
1TL 40" export pipeline	135 kms	Maintained for production	Future (~10 years+)
2TL 42" export pipeline	135 kms	Maintained for production	In planning (~5 years)
NRC Platforms			
North Rankin Alpha	Topside weight = 18,073 t Jacket weight = 14,765 t	Maintained for production	Future (~10 years+)
North Rankin Bravo	Topside weight = 29,250 t Jacket weight = 23,019 t	Maintained for production	Future (~10 years+)
Redundant Equipment			
Exploration wells, temporarily abandoned (ETA)	North Rankin-2 North Rankin-3 North Rankin-6	Suspended	In planning (~5 years)
Abandoned wells, wellhead in place (AW)	North Rankin-1 North Rankin-4 North Rankin-5	Abandoned	In execution (activities approved in NWS and Julimar Exploration wellhead removal EP)
PEN-08/PSP-01	NRA Dry tree well, didn't penetrate reservoir and never produced	Suspended	In planning (~5 years)

7.3.4 NRC Decommissioning Strategy

Decommissioning of the North Rankin Complex is being considered in two stages; firstly the decommissioning of the Persephone subsea tieback and secondly, the decommissioning of greater North Rankin Development.

Cessation of production for the Persephone field is presently estimated to be 2027 and the greater North Rankin development in around 2035. Timing is indicative only and subject to unnotified change based on production forecasting.

The second trunkline to shore, 2TL, is anticipated to no longer be required in ~2029. Decommissioning options, including a re-use opportunity, are being investigated.

Decommissioning of the Persephone wells, subsea infrastructure and cessation activities for the 2TL trunkline will likely occur around 2029 but subject to change.

The wider NRC production system infrastructure, excluding the Persephone subsea tie back, is anticipated to remain in service through to EoFL in around 2035. Timing is indicative only and subject to unnotified change based on production forecasting.

Decommissioning of the broader NRC development will be considered as a whole campaign given the reservoir characteristics (all wells anticipated to produce until EoFL), connectivity of equipment, treatment of the pipelines and jacket network. Final-end state decisions and execution will be finalised at EOFL.

The Angel development ties back to the NRC development but is addressed under separate Environment Plans.

In line with Woodside's decommissioning planning process outlined above, an Asset Closure Management Plan has been prepared for the NWS Gas Offshore assets. .

Decommissioning of the infrastructure is being undertaken in two phases:

- Decommissioning planning (commenced)
- Decommissioning execution (after cessation of production)

The timing of the main activities related to decommissioning planning and execution for the NRC are subject to change as plans develop and specific decommissioning requirements are defined, however the current schedule is presented in **Figure 7-6** below.

7.3.5 Decommissioning Planning Activities

7.3.5.1 Production Infrastructure

Planning for decommissioning has commenced and will continue over 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.

During the decommissioning planning phase all infrastructure, including suspended 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.

Decommissioning execution activities are expected to commence as follows, in alignment with the NOPSEMA Decommissioning Compliance Strategy 2024-2029 (NOPSEMA, 2023):

- Plug and abandonment of production wells: within three years of cessation of production
- Decommissioning of subsea equipment: within five years of cessation of production.

7.3.5.2 Wells

Woodside continues to undertake detailed technical assessments of wells within WA-1-L. This is to ensure that wells are abandoned to the relevant regulatory requirements, including permanent downhole barriers.

Current planning for wellhead decommissioning is premised upon applying the regulatory base case of removal, with consideration of the principles of ALARP and acceptability. Once a well has been accepted as permanently abandoned and the decommissioning activity is defined, a separate EP will be submitted for the wellhead decommissioning activity. This well with a wellhead is to continue to be maintained until it is decommissioned.

Should wells require further plugging and abandonment activities, these will be carried out under a separate, activity specific EP.

7.3.5.3 Persephone Plug and Abandonment Planning

Woodside has initiated studies on the permanent plug and abandonment of the Persephone subsea wells as, pending well suspension timing, they are included as an option in an upcoming P&A campaign.

The subsurface studies in support of the abandonment design, along with technical well studies for well re-entry and abandonment. Although the wells remain producing, the plug and abandonment project is well enough advanced that it could be included in an opportunistic rig campaign should EoFL occur earlier than anticipated.

The wells are monitored and maintained in accordance with the Woodside Well Integrity Process for production wells. Monitoring of the Persephone wells continues as per the approved WOMP and well integrity management procedure. This will remaining unchanged when they transition from being in production to being suspended.

7.3.5.4 Persephone Subsea Infrastructure Decommissioning Planning

In accordance with Section 572(2) of the OPGGS Act, all infrastructure in the title area and used in connection with operations must be maintained in good condition and repair. Equipment associated with the Persephone wells and subsea equipment will continue to be inspected, monitored and maintained in accordance with the Woodside Asset Maintenance and Inspection regime for producing infrastructure. This will remain unchanged when the infrastructure transitions from being in production to being redundant.

7.3.5.5 Preparation for Cessation of Production

Flushing of the Persephone flowlines will occur following cessation of production and prior to plug and abandonment activities. It is anticipated to be conducted from the NRA topsides to the reservoir, leaving the flowlines temporarily preserved with treated seawater.

Flushing and cleaning the flowlines, prior to permanent plugging of the wells, leads to the internal fluid being replaced with preservation fluid. This typically consists of seawater treated with an oxygen scavenger and a biocide.

Leaving the Persephone subsea infrastructure in situ under these conditions and meeting the maintenance requirements satisfies the requirements of Section 572 of the OPGGS Act.

7.3.5.6 Decommissioning Execution Planning

Woodside is in the early planning phase for decommissioning the Persephone subsea infrastructure by progressing technical engineering studies. These studies assess removal options, timing of removal and synergies with other planned decommissioning activity. The decommissioning activities will be subject to a separate EP.

Preliminary decommissioning planning will commence in 2024 on the NWS trunklines, specifically 2TL. This includes early regulator engagement, studies on contaminants, degradation, stability,

habitat retention and removal methodologies. Cessation and end state activities or modifications of 2TL for alternate use will be subject to future separate EP submissions.

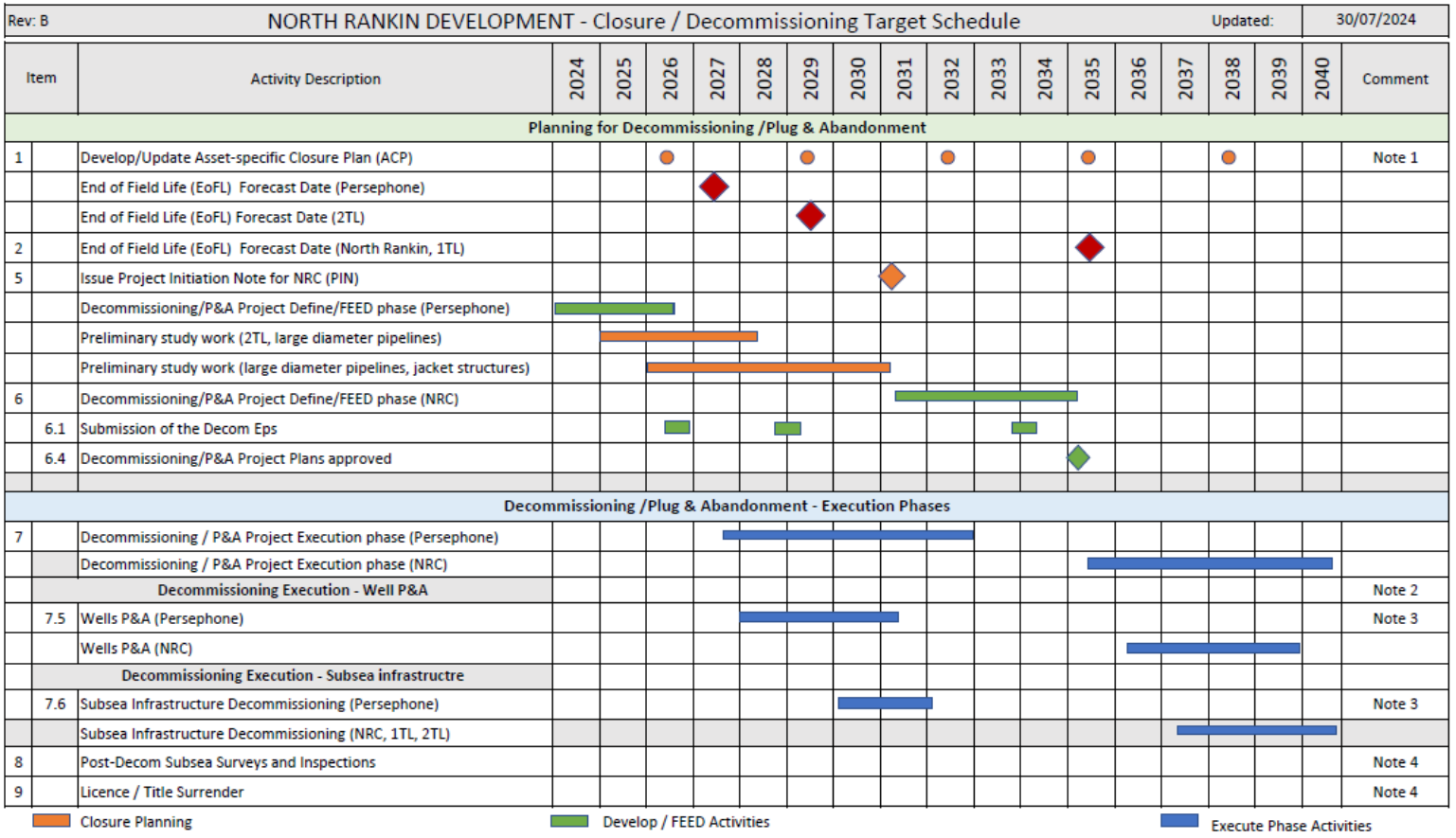


Figure 7-6: NRC decommissioning planning lifecycle and schedule

7.4 Organisation Structure

The following Woodside organisational structure provides leadership and direction for operation of the facility and environmental performance:

- The Executive Vice President (EVP) and Chief Operations Officer (COO) Australia reports to the Chief Executive Officer (CEO).
- The VP North West Shelf reports to the EVP & COO Australia.
- The Asset Manager reports to the VP North West Shelf.
- The Reliability & Integrity Manager reports to the VP North West Shelf.
- The functional support teams report to the corresponding Business Unit.

All Production facilities are supported by a team of environmental professionals who report to the Production Environment Manager.

All facilities are supported by other Woodside functional teams, including:

- **HSE** – provides specific guidance and access to specialist HSE resources including assistance for governance and training, as well as guidance on Woodside HSE standards
- **Subsea** – responsible for the installation and IMMR activities on subsea infrastructure including facility structures, flowlines, manifolds and subsea isolation valves to ensure integrity
- **Global Wells and Seismic** – ensures the safe planning and execution of drilling, completion and work over operations
- **Projects** – responsible for the engineering, construction and execution of 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.

7.5 Roles and Responsibilities

Key roles and responsibilities for Woodside and contractor personnel in relation to implementing, managing and reviewing this EP are described in **Table 7-5**. Roles and responsibilities for hydrocarbon spill preparation and response are outlined in **Table 7-5**, **Appendix D** and the Woodside Oil Pollution Emergency Arrangements (Australia).

It is the responsibility of all Woodside employees and contractors to apply the Woodside Corporate Health, Safety, Environment and Quality Policy in their areas of responsibility and that the personnel are suitably trained and competent in their respective roles.

Table 7-5: Roles and Responsibilities

Title (role)	Responsibilities related to EP
All Personnel	
All facility-based personnel and onshore support personnel	• Understand the Woodside standards and procedures that apply to their area of work. • Understand the environmental risks and control measures that apply to their area of work. • Carry out assigned activities in accordance with approved procedures and the EP. • Follow instructions from relevant supervisor with respect to environmental protection. • Cease operations which are deemed to present an unacceptable risk to the environment. • Participate in environmental assurance activities and inspections as required. • Prompt reporting of environmental hazards/incidents to their supervisor and assist in event investigation. • Attend HSE meetings, training and drills when required.
Office-based Personnel	
Asset Manager	• Accountable for ensuring all necessary regulatory approvals are in place to operate. • Approve (decide on) the content to be contained in the Environment Plan. • Accountable for managing the asset throughout its operations in accordance with legislative/regulatory requirements (including this EP) and WMS requirements. • Approve written notification to regulatory authorities (for example notifications to NOPSEMA under this Environment Plan). • Agree facility key performance indicators (KPIs), including environment KPIs, and accountable for their achievement. • Accountable for incident notification, reporting and investigation in line with regulatory requirements, the WMS and EP requirements. • Decide on technical decisions where required based on assessed current level of risk. • Responsible for continuous improvement of operations of the facility, including environmental performance.
Asset Superintendent	• Responsible for the operation of the facility in accordance with legislative/regulatory requirements (including this EP) and the WMS. • Accountable for aspects of integrity management. • Accountable for conformance to production Operations processes including ISSoW. • Decide on technical decisions where required based on assessed current level of risk. • Communicate changes relevant to the EP to the Production Environment team.

Title (role)	Responsibilities related to EP
Reliability and Integrity Manager	• Steward of Reliability and Integrity for the business unit. • Lead a team that expertly ensures that strategies for equipment maintenance and operation are set to meet Reliability, Performance and Integrity goals. • Ensuring that the Safety Case, Performance Standard, Regulatory and Reliability driven maintenance tasks for all equipment are known and implemented in the most efficient maintenance strategy possible. • Ensuring that Very High and Severe risks are assessed and controlled when they appear, and that the right technical expertise, including technical authorities, is engaged to understand, communicate and manage the risk, as part of the 'Agree' role in the Engineering Management Procedure. • Ensuring that refresh of facility baseline risk assessments is completed upon trigger of re-assessment. • Assuring that reliability and integrity delivery processes in the assets is being done to correct standard and engaging with relevant process owners.
Technical Support Lead	• Responsible for safeguarding process safety with respect to the asset. • Ensure technical integrity risks are identified, managed and reduced to ALARP. • Recommend technical decisions where required based on assessed current level of risk.
Integrity Authorities (Technical Integrity Custodians, Technical Authorities and Engineering Authorities)	• Agree technical integrity decision based on assessed current level of risk with discipline owner. • Undertake process safety responsibilities as defined under the Woodside process safety framework.
Environment Manager Australian Operations	• Facilitate operations environmental approval documentation and timely submission in accordance with regulatory requirements. • Facilitate review of the EP, including five-yearly revision and in relation to any technical decisions or proposed changes to operations. • Ensure Asset and supporting personnel understand and adhere to legislative and regulatory environment requirements, EP requirements and the environmental requirements of the WMS. • Monitor and communicate to internal stakeholders relevant changes to legislation, policies, regulator organisation that may impact the EP or business. • Develop and maintain appropriate Production environmental processes and procedures.
Environment Adviser Australian Operations	• Manage change relevant to the EP in accordance with the regulations and the EP. • Ensure environmental monitoring, offshore inspections, and reporting is undertaken as per the requirements of this EP. • Coordinate and monitor closeout of corrective actions. • Ensure environmental inspections/audits are undertaken as per the requirements of the EP.

Title (role)	Responsibilities related to EP
	• Ensure environmental incident reporting meets regulatory requirements (as described within the EP) and WMS.
Subsea and Pipelines (IMMR) Activity Manager	• Ensure IMMR activities 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. • Provide sufficient resources to implement the EP requirements. • Monitor and close out corrective actions raised from IMMR environmental inspections/audits or incidents. • Responsible for governance of IMMR related activities of subsea support vessels.
Corporate Affairs Adviser	• Prepare and implement the Consultation Plan for the Petroleum Activities Program. • Report on consultation. • Perform ongoing liaison and notification as required as per Section 7.10.
Woodside Marine Services Function	• Conduct relevant audit and inspection to confirm vessels comply with relevant Marine Orders and Woodside Marine Charters Instructions requirements to meet safety, navigation and emergency response requirements
Woodside CIMT Deputy Incident Commander	• On receiving notification of an incident, the Woodside CIMT Deputy Incident Commander shall: - establish and take control of the IMT and establish an appropriate command structure for the incident - assess situation, identify risks and actions to minimise the risk - communicate incident progress to relevant persons within the organisation - develop the incident action plan (IAP) including setting objectives for action - approve, implement and manage the IAP - communicate within and beyond the incident management structure • manage and review safety of responders - address the broader public safety considerations - conclude and review activities.
Contractor Sponsors	• Ensure implementation of EP for the contractor's scope of work. • Ensure contractors have adequate environmental capability to execute their respective scopes of work. • Review contractor environmental performance as required.

Title (role)	Responsibilities related to EP
Offshore-based Personnel	
NRC Offshore Installation Manager	• In charge of the facility and the field. • Accountable for implementation of the EP at the facility. • Ensure offshore personnel comply with regulatory/legislative requirements (including the EP) and the WMS. • Responsible for Area Operations compliance with Technical Integrity requirements including Management of Change process, Permit to Work process and MOPO and process safety requirements. • Single point responsible person for coordination of simultaneous activities. • Accountable for the performance and development of direct reports, ensuring operator capability and competency across all shifts and ensuring the skill requirements of the Production Division are being met. • Implement relevant offshore environment initiatives and review environmental performance to drive continuous improvement. • Ensure effective communication with workforce on environmental performance. • Ensure incidents are reported and investigated in line with WMS and EP requirements, with appropriate actions initiated and closed out. • Lead response efforts (as Incident Controller) in managing emergency or crisis scenarios. • Ensure exercises and drills are conducted in a manner to assure the facility's ability to respond effectively to an emergency. • Decide on technical decisions where required based on assessed current level of risk. • Communicate changes relevant to the EP to the Environment team.
Operations Supervisor/ Operations Team Leader/ Maintenance Team Leader/ Shift Supervisor	• Accountable for the day-to-day operations of the facility including effective shift handover; completion and logging of operator routine. • Responsible for operations shift compliance to all legislative and regulatory requirements as defined in the EP. • Responsible for permitting and isolation for all frontline work activities. • Responsible for following emergency response protocols in accordance with the emergency response procedure and fulfilling allocated emergency response roles. • Responsible for leading and coordinating a multi-disciplined team performing specific duties required to support the facility, including helicopter operations, vessel movements and consumable controls.
Operations and Maintenance Technicians	• Responsible for all daily operations on the facility within their operational control. • Undertake daily operational and maintenance tasks in accordance with approved standards and procedures to ensure compliance with the EP. • Manage day-to-day environmental risks through use of iSSoW and other risk management tools. • Identify opportunities for continuous improvement and communicate these to their Supervisor.

Title (role)	Responsibilities related to EP
	• Complete training requirements to maintain competence and knowledge in operating and maintaining equipment and manage environmental risks and impacts. • Participate in environmental assurance activities and inspections as required. • Report all environmental hazards and incidents and assist in investigations.
NRC Health, Safety and Environment Coordinator (HSEC)	• Liaise with managers/supervisors on day-to-day management of environmental risks and issues. • Assist in the ongoing promotion of environmental performance at the facilities and day-to-day management of HSE risks and issues. • Support operational personnel to understand the EP requirements applicable to their role. • Identify opportunities for continuous improvement and communicate these to the OIM and Environment Team. • Implement environmental improvement plans. • Communicate environmental performance information and training material to offshore personnel and maintain associated records.
Vessel-based Personnel	
Vessel Master of Support Vessel (Subsea Support Vessels)	• Understand and manage HSE aspects of the vessel, including environmental requirements. • Communicate with OIM as required regarding potential environmental risks applicable to vessel activities. • Ensure vessel meets quarantine requirements. • 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 has sufficient training to implement the vessel's SOPEP. • Ensure all emergency and SOPEP drills are conducted. • Ensure vessel procedures are followed in the event of an emergency or spill. • Immediately notify the Woodside Representative of any environmental incidents.
Subsea and Pipelines Site Woodside Representative	• Ensure relevant management measures in this EP are implemented on the subsea support vessel. • Ensure periodic environmental inspections are completed. • Ensure environmental incidents or breaches of EPOs, EPSs or MCs are reported in accordance with Woodside and regulatory requirements. • Ensure Subsea Support Vessel induction attendance is recorded.

7.6 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 Global Heritage Manager.
- 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 Global Heritage Manager.
- Woodside's Global Heritage Manager must notify a qualified underwater archaeologist and provide all available documentation of the potential Underwater Cultural Heritage.
- If the potential Underwater Cultural Heritage appears to be Aboriginal underwater cultural heritage, Woodside's Global Heritage Manager 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 Global Heritage Manager must notify the Minister responsible for the UCH Act, the DCCEEW underwater archaeology section through the Australasian Underwater Cultural Heritage Database, and the Western Australian Museum.
- If the suspected heritage object includes human remains, Woodside's Global Heritage Manager 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 Principal Heritage Adviser provides written approval. Woodside's Global Heritage Manager must only provide written approval once agreed management measures are implemented consistent with approvals and legislation or where the potential Underwater Cultural Heritage is confirmed to not be Underwater Cultural Heritage.

7.7 Training and Competency

Woodside as part of its contracting process undertakes assessments of a proposed Contractor's environmental management system to determine the level of compliance with the standard AS/NZS ISO 14001. This assessment is undertaken for the Petroleum Activities Program as part of the pre-

mobilisation process. The assessment determines whether there is a clearly defined organisational structure that clearly defines the roles and responsibilities for key positions. The assessment also assesses whether there is an up-to-date training matrix that defines any corporate and site/activity-specific environmental training and competency requirements.

As a minimum, environmental awareness during inductions is required for all NRC facility personnel, detailing awareness and compliance with the facility, and support vessel Contractor's environmental policy and environmental management system.

7.7.1 Inductions and Training

Inductions are mandatory for all personnel prior to mobilisation to their activity location (e.g., contractors and Company representatives). The induction covers the HSE requirements and environmental information specific to the activity location.

The Petroleum Activities Program induction may cover information about:

- Description of the activity;
- Ecological and socio-economic values of the activity location (including underwater cultural heritage);
- Regulations relevant to the activity;
- Woodside's Environmental Management System – Health, Safety and Environment Policy;
- EP importance/structure/implementation/roles and responsibilities;
- Main environmental aspects/hazards and potential environmental impacts and related performance outcomes;
- Oil spill preparedness and response;
- Monitoring and reporting on performance outcomes and standards using MC;
- Incident reporting;
- Inductions for offshore facility workers and visitors;
- Operations competency framework training;
- Permit to work training (ISSoW);
- Production environmental leadership training and environment awareness training;
- Emergency and hydrocarbon spill response training;
- Inductions for subsea IMMR (vessel based) personnel; and
- Unexpected Finds Procedure and reporting requirements **(Section 7.6**).

Records for Woodside operations personnel, in relation to the above-listed training, are maintained in Woodside's Learning Management System. Contractor training records are maintained in the Contractor Verification platform.

Competence of operations personnel can be reviewed via online dashboards.

7.7.2 Specific Environmental Awareness

Before petroleum activities begin, a pre-activity meeting will be held on-board the facility and support vessels with all relevant personnel. The pre-activity meeting provides an opportunity to reiterate

specific environmental sensitivities or commitments associated with the activity. Relevant sections of the pre-activity meeting will also be communicated through to the support vessel personnel. Attendance lists are recorded and retained.

During operations, regular HSE meetings will be held on the facility and support vessels which cover all crew. During these meetings, recent environmental incidents are regularly reviewed, and awareness material presented.

7.7.3 Inductions for Offshore Facility Workers and Visitors

A comprehensive induction process is in place for personnel working on or visiting Woodside's offshore production facilities. The induction process is designed to equip personnel with the HSE awareness and skills necessary for them to manage their own safety and environmental performance and contribute to others working around them. The induction process includes:

- **Common Production Induction** – All employees and contractors who have not accessed a production facility within 12 months are required to undertake this induction prior to mobilisation. It includes Woodside's values, HSEQ and Process Safety, continuous improvement and risk management.
- **ISSoW** - All members of the workforce that are required to work with ISSoW receive training commensurate with the level of authority and responsibility they hold in ISSoW.
- **Facility Specific Induction** – All employees and contractors that have not accessed the production facility within twelve months are required to undertake this induction before or upon arrival at the facility. This induction covers the HSE and emergency response issues specific to each facility.
- **Production Offshore Environmental Leadership Training** – Key operations leadership roles (as specified within the Operations Competency Framework) are required to complete this competency on commencement of the new role and three yearly thereafter. The training covers Woodside's policies and standards, environmental legislative requirements, the EP, key environmental risk and impacts, environmental reporting, environmental management tools (e.g., improvement planning, compliance reviews and audits), hydrocarbon spill response and environmental accountabilities.
- **Production Offshore Environmental Awareness Training** – All new offshore operational personnel are required to undertake this online training on commencement of the new role and two yearly thereafter. This training covers environmental legislative requirements, the facility EP, key environmental hazards and control measures (including waste management, spill prevention, chemical storage, wildlife interactions as well as other relevant environmental aspects), environmental management tools, hazard and incident reporting, spill response, and environmental responsibilities.

7.7.4 Operations Competency Framework Training

The Operations Competency Guideline outlines the requirements for competency and proficiency within the Australian Operations Division and informs individuals of their roles and responsibilities to ensure safe, reliable, and efficient operations. By doing this, the potential for unplanned (accident/incident) type events that could result in environmental impact is minimised.

Operational Area Licence to Operate (LTO) roles are those roles related to oil and gas processing, equipment maintenance, marine regulations, emergency response and any other roles involved with safeguarding the facility integrity, including all roles where high-risk work licences are required.

The requisite competency and training for each LTO role has been defined. Competencies for these LTO roles are stipulated by the governance group for each respective position and are based on the relevant Australian or International standards which apply. In cases where no Australian or International standards are available or applicable, training is based on the relevant Woodside Standard as determined by the respective governance group.

Contractors working on Woodside facilities are required to verify the competency of their personnel through the contractor's own verification systems. Additionally, contractor personnel working on Woodside facilities are required to be registered in Woodside's Contractor Verification Service (CVS) beforehand. Personnel registered in CVS have had their skills and qualifications independently verified on behalf of Woodside thereby confirming that contractor personnel hold the required competencies before mobilisation to the facility.

The Woodside Competency Reporting Dashboard provides the conformance status of the facility against the LTO roles requirements.

7.7.5 Permit to Work System Training

The ISSoW permit to work (i.e., participation in crisis or emergency management exercises). Roles based training is further described in **Section 7.12**.

An overview of Woodside's hydrocarbon spill response training and competency requirements are provided in dashboards for key responder roles. The roles are consistent with Woodside's crisis and emergency management incident control structure system (see **Section 7.2.1**) is a key element in ensuring that all necessary steps are taken to ensure the safety of personnel, protection of the environment and technical integrity of the facility. The ISSoW system takes a risk-based approach to all activities, thus tasks with higher levels of risk are subjected to greater scrutiny and control.

All members of the workforce that are required to work with ISSoW (**Section 7.2.1**) receive training commensurate with the level of authority and responsibility they hold in ISSoW.

7.7.6 Emergency and Hydrocarbon Spill Response Training

All operations personnel involved in crisis and emergency management are required to commit to ongoing training, process improvement and participation in emergency and crisis response (both real and simulated), including emergency drills specific to potential incidents at the facility. Training includes task specific training and role-based training and 'on the job' experience.

Woodside Hydrocarbon Spill Preparedness Advisor(s) are responsible for maintaining hydrocarbon spill preparedness competency. This includes the identification and development of approved competency and non-competency-based courses, identification of relevant personnel required to undertake training and ensuring training records are maintained. Minimum Woodside capabilities will continue to be identified and documented.

7.7.7 Subsea Inspection, Monitoring, Maintenance and Repair Activity Environmental Awareness

At the beginning of, and during a new Subsea IMMR activity, the Subsea Support Vessel crew including contractor crew, Woodside representatives and other relevant personnel are required to undertake a vessel induction before commencing work. This induction covers HSE requirements for the vessel and IMMR activities, and as required environmental information specific to the activity location. The induction may cover the following environmental information:

- Adherence to standards and procedures, and the use of Job Safety Analysis and permit to work hazard identification and management process;

- Spill management including prevention, response and clean-up, location of spill kits and reporting requirements;
- Waste management requirements and location of bins;
- Reporting of marine fauna, location of forms and charts; and
- 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.

7.7.8 Management of Training Requirements

All personnel on the facility and support vessels are required to be competent to perform their assigned positions. This may be in the form of external or 'on the job' training. The vessel Safety Training Coordinator (or equivalent) is responsible for identifying training needs, keeping records of training performed and identifying minimum training requirements.

7.8 Monitoring, Auditing, Management of Non-conformance and Review

Regulation 22(5) states that the implementation strategy is to provide for the monitoring, audit, management of non-conformance and review of operator's environmental performance and the implementation strategy itself.

This section of the EP outlines the measures undertaken by Woodside to regularly monitor the management of environmental risks and impacts of the facility against the EPOs, EPSs and MC, with a view to continuous improvement of environmental performance. The effectiveness of the implementation strategy is also reviewed periodically as part of the monitoring and assurance process.

7.8.1 Monitoring

Woodside and its contractors will perform a program of periodic monitoring during the Petroleum Activities Program – starting at mobilisation of each activity and continuing through the duration of each activity to activity completion. This information will be collected using the tools and systems outlined below, developed based on the EPOs, controls, standards and MC in this EP. The tools and systems will collect, as a minimum, the data (evidence) referred to in the MC in **Section 6** and **Appendix D**.

The collection of this data will form part of the permanent record of compliance maintained by Woodside and will form the basis for demonstrating that the EPOs and standards are met, which will be summarised in a series of routine reporting documents.

7.8.1.1 Source-based Impacts and Risks

The tools and systems to monitor environmental performance, where relevant, will include:

- Daily reports which include leading indicator compliance
- Periodic review of waste management and recycling records
- Use of contractor's risk identification program that requires recording and submitting safety and environment risk observation cards routinely (frequency varies with contractor)

- Collection of evidence of compliance with the controls detailed in the EP relevant to offshore activities by the Woodside Offshore HSE Adviser (other compliance evidence is collected onshore)
- Environmental discharge reports that record volumes of planned and unplanned discharges downhole (in the well), to ocean and atmosphere
- Monitoring of progress against the Global Wells and Seismic function and Operations Division scorecards for KPIs
- Internal auditing and assurance program as described in **Section 7.8.2**.

Throughout this activity, Woodside will continuously identify new source-based risks and impacts through monitoring and auditing systems and tools described above and in **Section 7.8.2**.

Other examples of assurance tasks implemented through the EP include (as an example):

- Start of shift operator walk arounds;
- Permit to work hazard, risk management check list, area sign-on, and permit audits (ISSoW – **Section 7.2.1**);
- Technical integrity SCE performance reviews (daily, weekly, monthly) (**Section 2.7.5**);
- Ongoing maintenance performance assurance (e.g., conformance dashboard);
- Management system performance audits reviews (e.g., MSPSs) (**Section 7.8.2**); and
- Data gathering and governance dashboard presentations (e.g., Woodside Integrated Risk and Compliance System).

7.8.1.2 Management of Knowledge

Review of knowledge relevant to the existing environment is undertaken in order to identify changes relating to the understanding of the environment or legislation that supports the risk and impact assessments for EPs (in-force and in-preparation). New knowledge checks take place both routinely primarily via quarterly and annual knowledge reviews and ad hoc (as information is obtained), and encompasses the following topics:

- Environmental science – update checks conducted via desktop reviews: scientific literature, government publications and Woodside supported publications and studies relating to existing environment topics (including but not limited to species and habitats) as well as EPBC Act Matters of National Environmental Significance (Part 3) and Part 13 statutory instruments.
- Socio-economic environment and stakeholder information – update checks conducted via desktop reviews: scientific literature, government publications and Woodside consultation; and,
- Environmental legislation – monitoring of emerging regulatory changes and the subsequent management of regulatory change (as outlined in the WMS Regulatory Compliance Management Procedure).

A management of knowledge tracker is maintained to record reviews and updates. Communication of relevant new knowledge is addressed at the EP Consolidation meetings where changes in knowledge prompt a consideration of management of change, this is actioned and documented appropriately.

The frequency and documentation of reviews, communication of relevant new knowledge and consideration of management of change are documented in the WMS Environment Plan Guideline.

Any relevant new information on cultural values and heritage will be assessed using the EP Management of Change Process.

Under the Operational and Scientific Monitoring Program preparedness, an annual review and update to the environmental baseline studies database is completed and documented. Periodic location-focused environmental studies and baseline data gap analyses are completed and documented. Any subsequent studies scoped and executed as a result of such gap analysis will be updated in the baseline monitoring database.

7.8.1.3 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.

Table 7-6: 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	Greenhouse, energy and criteria pollutants	Normally continuous process metering/annual reporting	NGERS and NPI reporting estimation methods (e.g., fuel/flare flow meters, throughput meters, process estimation)	**Section 6.6.7**
	Fuel gas and flare intensity	Normally continuous process metering/monthly reviews	Fuel and flare flowmeters inform intensity profiles – tracked against optimisation targets	**Section 6.6.7**
Planned Discharges				
Discharge of subsea control fluids during valve actuations	Subsea control fluid consumption	Normally continuous process indication/monthly review	Subsea control fluid consumption surveillance. Process indication for gross leaks/ruptures	**Section 6.6.4**
Discharge of hydrocarbons and chemicals during subsea IMMR activities	Volumes of hydrocarbons and chemicals released subsea	As required, during IMMR activities (activity specific)	Estimates based on known volumes pumped and ROV observation	**Section 6.6.4**
Discharge of produced water	Volume discharged overboard	Normally continuous process indication/monthly review	PW flow meter(s), process estimation	**Section 6.6.5**
	OIW concentration of discharged PW	Normally continuous process indication/monthly review	Normally continuous process metering/monthly review	
	Chemical characterisation	Annually	Characterisation of end of pipe sample	
	WET testing	Three yearly	PW ecotoxicity testing	
Waste recycling and disposal	Quantities of solid and liquid wastes disposed of onshore	Ongoing	Facility waste manifest	**Section 6.8.2**
Unplanned Emissions and Discharges				
Unplanned emissions and discharges	Nature of release	As required	HSEQ Event Reporting System (First Priority)	**Sections 6.7 and 6.8**

7.8.2 Auditing

Environmental performance auditing will be performed to:

- Identify potential new or changes to existing environmental impacts and risks, and methods for reducing those to ALARP;
- Confirm that mitigation measures detailed in this EP are effectively reducing environmental impacts and risks, are practicable and provide appropriate information to secure compliance; and
- Confirm compliance with the EPOs, Controls and EPSs detailed in this EP.

Internal auditing will be performed to cover each key project activity as summarised.

7.8.2.1 Support Vessel Assurance

The following internal assurance will be performed for vessel-based activities:

- A pre-mobilisation inspection/audit will be conducted by relevant personnel. The scope of the audits are risk-based and specific to the relevant activity, but will generally focus on aspects relating to ensuring appropriate understanding of environmental commitments and the operational readiness of the activity scope, including appropriate environmental controls in place. All vessels associated with identified scopes will be audited by Woodside.
- At least one operational compliance audit relevant to applicable EP commitments will be conducted by a Woodside Environment Adviser for subsea support vessels. The audit may be conducted offshore or be office-based, subject to the duration of the activity and logistics of performing the audit offshore for short duration scopes.
- Contractor-specific HSE audits will also be conducted of all support vessels. The audits will consider the implementation of HSE management, risk management, as well as pre-mobilisation and offshore readiness.
- Vessel-based HSE inspections will be conducted fortnightly by vessel HSE personnel. Each inspection will focus on a specific risk area relevant to the project activity and a formal report will be issued (for example, bunkering controls, chemical and discharge management, cetacean reporting, etc).
- Annual inspection of Woodside's long-term hire support vessels are undertaken to ensure compliance with both the EP and the approved Contractor Management system.

The internal audits and reviews, combined with the ongoing monitoring described in **Section 7.8.1**, and collection of data referenced in the MC are used to assess EPOs and EPSs.

As part of Woodside's EMS and/or assurances processes, activities may also be periodically selected for environmental audits as per Woodside's internal auditing process. Audit, inspection and review findings relevant to continuous improvement of environmental performance are tracked through the Environmental Commitments and Actions Register.

This Environmental Commitments and Actions Register is used to track support vessel and subsea activity compliance with EP commitments, including any findings and corrective actions.

Non-conformances identified will be reported and/or tracked in accordance with **Section 7.8.3**.

7.8.2.2 Operations Assurance

The Provide Assurance Procedure and the Provide Assurance Guideline ensure that risks are managed while business activities are being performed. The Guideline aims to explain how the Operations Division Assurance Team implements WMS Assurance requirements, while concurrently satisfying the Operations Division's specific objectives.

Operations Assurance Assignments are contained within the Operations Division Integrated Assurance Assignment Plan.

Environmental assurance activities are conducted on a regular basis to help:

- Verify environmental risks and potential impacts are being managed in accordance with the EPOs and EPSs;
- Monitor, review and evaluate the effectiveness of the EPOs and EPSs;
- Verify effectiveness of the implementation strategy; and
- Identify potential non-conformances.

The outputs of the assurance process are corrective actions that drives continuous improvement.

7.8.2.3 Annual Offshore Inspection / Desktop Review

An inspection/review of the NRC facility is undertaken every calendar year by the Production Environment Team, via either an offshore inspection or desktop review. Selected risk areas and/or activities are inspected with respect to performance against relevant EPOs and EPSs. Outcomes are intended to verify that control measures are effective in reducing the environmental impacts and risks of the activity to ALARP and an acceptable level.

The inspection/review also includes review of conformance with selected aspects of the implementation strategy. All risk sources/activities applicable to the NRC 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).

7.8.2.4 Marine Assurance

Woodside's marine assurance is managed by the Marine Assurance Team within the Operations Support Function in accordance with Woodside's Marine Offshore Vessel Assurance Standard. The Woodside assurance 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 are seaworthy and meet the requirements for a defined scope of work.

The process is multi-faceted and encompasses:

- Offshore Vessel Safety Management System Assessment (OVMSA);
- DP system verification; and
- Vessel inspections.

Vessel inspections are used to verify compliance with the company's Safety Management System, the overall condition of vessels and the status of planned maintenance system onboard. A Woodside Marine Assurance Specialist will conduct a risk assessment on each vessel to determine the level of assurance applied and the type of vessel inspection required.

Methods of vessel inspection may include, and are not limited to:

- Woodside marine vessel inspection;
- Oil Companies International Marine Forum (OCIMF) Offshore Vessel Inspection Database (OVID) inspection;
- IMCA CMID inspection; and
- Marine warranty survey.

The Woodside Marine Assurance Team will issue the vessel a statement of approval upon completion of the marine assurance process if any identified concerns are addressed appropriately and any conditions imposed are managed.

Where a vessel inspection and/or OVMSA Verification Review is not available and all reasonable efforts based on time and resource availability to complete a vessel 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. (**Section 7.8.2.5**).

Environmental requirements specific to platform support vessel contractors are communicated via Woodside marine charterers instructions. This document provides the Master of a vessel on hire to Woodside with a clearly defined set of requirements and procedures for operating the vessel in the vicinity of the Woodside's operating facilities. This includes the management of environmental risks and impacts from the facility. The document includes information on:

- Applicable legislation and guidelines;
- Roles and responsibilities;
- Marine fauna interaction guidance; and
- Incident reporting requirements.

Environmental requirements specific to Subsea Support Vessels are communicated via the Subsea Environmental Compliance Package. This document outlines mandatory environmental management requirements for Subsea Support Vessels and associated contractors.

7.8.2.5 Risk Assessment

Woodside conducts a risk assessment of vessels where either an OVMSA Verification Review and/or vessel inspection cannot be completed. This is not a regular occurrence and is typically used when the requirements of the assurance process are unable to be met or the processes detailed are not applicable to a proposed vessel(s). The Marine Vessel Risk Assessment will be conducted by the Marine Assurance Specialist, where the vessel meets the short-term hire prerequisites.

The risk assessment is a semi-quantitative method of determining what further assurance process activity, if any, is required to assure a vessel for a particular task or role. The process compares the level of management control a vessel is subject to against the risk factors associated with the activity or role.

Several factors are assessed as part of a vessel risk assessment, including:

- Management control factors:

  - Company audit score (i.e., management system);
  - Vessel HSE incidents;
  - Vessel Port State Control deficiencies;
  - Instances of Port State Control vessel detainment;
  - Years since previous satisfactory vessel inspection;
  - Age of vessel; and
  - Contractors' prior experience operating for Woodside.
- Activity risk factors:
  - People health and safety risks (a function of the nature of the work and the area of operation);
  - Environmental risks (a function of environmental sensitivity, activity type and magnitude of potential environment damage (e.g., largest credible oil spill scenario));
  - Value risk (likely time and cost consequence to Woodside if the vessel becomes unusable);
  - Reputation risk;
  - Exposure (i.e., exposure to risk based on duration of project); and
  - Industrial relations risk.

The acceptability of the vessel or requirement for further vessel inspections or audits is based on the ratio of vessel score to activity risk. If the vessel management control is not deemed to appropriately manage activity risk, a satisfactory company audit and/or vessel inspection may be required before awarding work.

The risk assessment is valid for the period a vessel is on hire and for the defined scope of work.

7.8.3 Management of Non-conformance

Woodside classifies non-conformances with EPOs and EPSs as environmental incidents. Woodside employees and contractors are required to report all environmental incidents, and these are managed as per Woodside's internal event recording, investigation and learning requirements.

An internal computerised database called First Priority is used to record and report these incidents. Details of the event, immediate action taken to control the situation, investigation outcomes and corrective actions to prevent reoccurrence are all recorded. Corrective actions are monitored using First Priority and closed out in a timely manner.

Woodside uses a consequence matrix for classification of environmental incidents, with the significant categories being A, B and C (as detailed in **Section 2.3**). Detailed investigations are completed for all categories A, B, C and high potential environmental incidents.

7.8.4 Review

7.8.4.1 Management Review

Within the Environment Function, senior management regularly monitor and review environmental performance and the effectiveness of managing environmental risks and performance. Within

eachBusiness Unit Leadership Team (e.g., Operations and Subsea), managers review environmental performance regularly, including through quarterly HSE review meetings.

Reviews of oil spill arrangements and testing are performed in accordance with **Section 7.12.7**.

Woodside's Operations Division Environment Team will perform routine reviews of the effectiveness of the implementation strategy and associated tools. This will involve reviewing the:

- Operations Division environment KPIs (leading and lagging); and
- Tools and systems to monitor environmental performance (detailed in **Section 7.8.1**).

Reviews of oil spill arrangements and testing are performed in accordance with **Section 7.12.7**.

7.8.4.2 Program of Ongoing Engagement with Traditional Custodians

Woodside will undertake an annual review of the Program of Ongoing Engagement with Traditional Custodians (**Appendix H**) 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.

7.8.4.3 Learning and Knowledge Sharing

Learning and knowledge sharing occurs via a number of different methods including:

- Event investigations;
- Event bulletins;
- Formal and informal industry benchmarking;
- Cross asset learnings;
- Engineering and technical authorities discipline communications and sharing; and
- Review of impacts, risks and controls across the life of the EP.

7.8.4.4 Continuous Improvement

Continuous improvement (CI) projects that involve refurbishment, modification or major maintenance on the facility are typically managed by Offshore Development and Delivery Engineering Teams and are required to follow Appraise and Develop management procedures. Currently, the procedures require that all projects be managed in accordance with the Investment Management Framework which supports the progressive maturation of an opportunity through value creation in the Assess and Select Phases and the maintenance of value in the Develop and Execute phases.

To support the accountable executive to make a decision on whether a CI Project should proceed to the next phase in the Investment Management Framework, it is sometimes necessary to conduct a trial of the modification to determine the outcomes that can be expected if the modification is implemented. Due to prioritisation of resources, the phased progress of opportunities, competition between different solutions and long-term strategic and financial considerations, it is not possible to set quantitative success criteria to determine whether a modification will be implemented based on the results of trials. Instead, the results of a trial are used to inform a decision on whether to progress the CI Project to the next phase in the Investment Management Framework. Decisions are typically made with two key considerations; whether the business is ready to proceed which has a technical/functional focus and whether there is a business case for progressing to the next phase. The business case may consider the ALARP position for the CI Project, if relevant.

7.9 Record Keeping

Compliance records (outlined in MC in **Section 6**) are maintained. Record keeping is in accordance with Regulation 22(15) that addresses maintaining records of emissions and discharges.

7.10 Ongoing Consultation

Although consultation for the purpose of Regulation 25 is complete, in accordance with Regulation 22(9) of the Environment Regulations, the implementation strategy must provide for appropriate consultation with relevant authorities of the Commonwealth, a State or Territory and other relevant interested persons or organisations.

Woodside proposes to undertake the engagements with directly impacted relevant persons and additional persons listed in **Table 7-7**. Relevant new information identified during ongoing consultation will be assessed using the EP Management of Knowledge (refer to **Section 7.8** and Management of Change Process.

Woodside hosts community forums at which members are provided updates on Woodside activities on a regular basis (for example community reference group meetings). Representatives who present at those meetings are from community and industry and include Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, industry representative bodies, Community and industry organisations.

Relevant persons and those who are simply interested in the activities, can otherwise remain up to date on this activity through subscribing to the Woodside website, or by reading the publicly available version of the EP on NOPSEMA's website, where available.

Should consultation feedback be received following EP acceptance that identifies relevant new information or a measure or control that requires implementation or update to meet the intended outcome of consultation (see **Section 5.2**), Woodside will apply its EP Management of Knowledge process (refer to **Section 7.8.1.2**) and Management of Change process as appropriate.

Woodside has developed a Program of Ongoing Engagement with Traditional Custodians (**Appendix H**), which is compliant with Corporate Woodside Policies Strategies and procedures and directly informed by feedback from Traditional Custodians. It provides a mechanism for ongoing dialogue so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the activity and in relation to caring for and managing country, including Sea Country. The Program will be tailored to each Traditional Custodian group and may include, as agreed with relevant Traditional Custodians:

- social investment to support Indigenous ranger programs
- support for Indigenous oil spill response capabilities
- support for recording Sea Country values
- support to Traditional Custodian groups to build capabilities and capacity with respect to ability to engage with Woodside and the broader 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.

At the time of EP submission, a number of specific activities as part of ongoing consultation regarding the activity are planned with Traditional Custodian Relevant Persons. These are described in

Appendix H. Where Traditional Custodian relevant persons have requested information or further engagement considered as ongoing consultation, but have not requested a framework agreement, these requests have been captured in **Table 7-7**. However, a framework agreement may still be initiated by these groups at any time.

Table 7-7: Ongoing Consultation Engagements

Report/ information	Recipient	Purpose	Frequency	Content
Notification (email)	AHO	As requested by AMSA during consultation	No less than 4 weeks prior to commencement.	**PS 1.3** (**Section 6.6.1**) Date of activity start.
Updates (email)			As required.	Changes to planned activities.
Notification (email)	AMSA	As requested by AMSA during consultation	Notify AMSA JRCC at least 24-48 hours before operations commence, if vessels are undertaking activities in, or in close proximity to (within 1 km of), shipping lanes.	**PS 1.5** (**Section 6.6.1**) Date of activity start.
			Notify AMSA ARC least 24-48 hours before operations commence, if vessels are undertaking activities within the Petroleum Activity Area for more than three weeks at a time.	
			Notify AHO no less than four weeks before operations, if vessels are undertaking activities within the Petroleum Activity Area for more than three weeks at a time.	
Notification (email) Updates (email)	WAFIC, Recfishwest and Wanparta	As requested during consultation	No less than 10 days prior to commencement and on completion of activities.	**PS 1.4** (**Section 6.6.1**) Date of activity start and end.
			As required.	Changes to planned activities.
Notification (email)	Other relevant persons	Notification of significant change	As required.	Notification of significant change.

Report/ information	Recipient	Purpose	Frequency	Content
Emails/ Meetings	Persons or organisations who provide feedback to Woodside post EP submission	Identification, assessment and consideration of feedback, claims and/or objections	As appropriate.	Assessment of claims and/ or objections. Relevant new information will be assessed using the EP Management of Knowledge (**Section 7.8**) and Management of Change Process.
Notification (email)	Australasian Underwater Cultural Heritage Database Any other stakeholders as required in the Unexpected Finds Procedure (**Section 7.6**)	Report any unexpected finds of potential Underwater Cultural Heritage	If triggered by Unexpected Finds Procedure (**Section 7.6**).	Refer to Unexpected Finds Procedure (**Section 7.6** and **C 3.3**).
Program of ongoing engagement with Traditional Custodians (**Appendix H**)	Relevant cultural authorities (**Appendix H**)	Ongoing engagement	Ongoing. Responses to any feedback received by Traditional Custodian groups will be provided by Woodside within four weeks of receipt. Progress on the Program will be reported in line with annual sustainability reporting via the Woodside website.	Assessment of cultural values. Any relevant new information on cultural values will be assessed using the EP Management of Knowledge (**Section 7.8**) and Management of Change Process.

7.11 Reporting

7.11.1 Overview

To meet the EPOs and EPSs outlined in this EP, Woodside reports at a number of levels, as outlined in the next sections.

7.11.2 Routine Reporting (Internal)

7.11.2.1 Daily Progress Reports and Meetings

The following daily reports containing environmental performance information are issued:

- Pan-Woodside Daily Production Report – The report includes facility performance information on production and a log of any HSE events; and
- Subsea support vessel Daily Progress Report(s) – During subsea IMMR activities, daily reports are issued by the Woodside Site Representative. The reports provide performance information

on HSE events, diesel use, together with equipment information, current and planned work activities.

Meetings between key personnel are used to transfer information, discuss incidents, agree plans for future activities and develop plans and accountabilities for resolving issues.

7.11.2.2 Regular Health, Safety and Environment Meetings

Regular dedicated HSE meetings are held with offshore and Perth-based management and advisers to address targeted HSE incidents and initiatives. Minutes of these meetings are produced and distributed as appropriate.

7.11.2.2.1 Performance Reporting

Monthly and quarterly performance reports are developed and reviewed by the Function and Business Unit Leadership Teams (e.g. Operations). These reports cover a number of subject matters, including:

- HSE incidents (including high potential incidents and those related to this EP) and recent activities;
- Corporate KPI targets, which include environmental metrics;
- Outstanding actions as a result of audits or incident investigations;
- Technical high and low lights; and
- Status of subsea IMMR activities.

7.11.3 Routine Reporting (External)

7.11.3.1 Start and End Notifications of the Petroleum Activities Program

7.11.3.1.1 NRC Operations

In accordance with Regulation 54, Woodside will notify NOPSEMA within ten days of the completion of the Petroleum Activities Program.

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.

The Petroleum Activities Program is not expected to end within the five-year life of this EP.

7.11.3.2 Cetacean and Whale Shark Sighting Reporting

Woodside will keep a record of any cetacean and whale shark sightings for the life of this EP. A sightings report will be submitted to the Australian Antarctic Division annually with the reporting period being by calendar year.

7.11.3.3 Environment 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. Regulatory reporting requirements are summarised in **Table 7-8**.

Table 7-8: Routine external reporting requirements

Report	Recipient	Frequency	Content
Monthly Recordable Incident Reports	NOPSEMA	Monthly, by the 15th of each month	Details of recordable incidents that have occurred during the Petroleum Activities Program for previous month (if applicable).
Annual Environment Plan Performance Report	NOPSEMA	Annual, by the 30th April of the year following reporting period	Compliance with EPOs, controls and standards outlined in this EP, in accordance with the Environment Regulations.
National Pollutant Inventory (NPI) Report	DCCEEW	Annual, by the 30th September each year	Summary of the emissions to land, air and water including those from the facility. Reporting period 1 July to 30 June each year.
National Greenhouse and Energy Reporting (NGERS)	Clean Energy Regulator	Annual, by the 31st October each year	Summary of energy use and greenhouse gas emissions including those from the facility. Reporting period is 1 July to 30 June each year.
Cetacean and Whale Shark Sightings Report	Australian Antarctic Division	Annually, by 31 January each year	Summary of any sightings of cetaceans or whale sharks. Reporting period is 1 Jan to 31 December.

7.11.3.4 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.

7.11.3.5 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.

7.11.4 Incident Reporting (internal)

The process for reporting environmental incidents is described in **Section 7.8.3**. All Woodside employees and contractors are required to report environmental incidents and non-conformances with this EP. Incidents are reported using an Event Report Form which includes details of the event, immediate action taken to control the situation, and corrective actions to prevent reoccurrence.

7.11.5 Incident Reporting (External) – Reporting and Recordable

7.11.5.1 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 Consequence Level of Moderate C+ or above (as defined under Woodside’s Risk Table; refer to **Section 2.2**); and

An incident that has the potential to cause environmental damage with a Consequence Level of Moderate C+ or above (as defined under Woodside's Risk Table – refer to **Section 2.6**).

The environmental risk assessment (**Section 6**) for the Petroleum Activities Program identifies those risks with a potential consequence level of C+ for environment. The incidents that have the potential to cause this level of impact include hydrocarbon loss of containment events to ocean resulting from:

- well loss of containment (MEE-01);
- subsea loss of containment (MEE-02);
- topsides loss of containment (MEE-03);
- loss of structural integrity (MEE-04);
- loss of marine vessel separation (MEE-05); and
- loss of control of suspended load (MEE-06).

Any such incidents represent potential events which 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.

7.11.5.1.1 Notification

NOPSEMA will be notified of all reportable incidents, according to the requirements of Regulation 47, 48 and 49 of the Environment Regulations. Woodside will:

- Report all reportable incidents to the regulator (orally) as soon as practicable (ASAP), but within two (2) hours of the incident or of its detection by Woodside;
- Provide a written record of the reported incident to NOPSEMA, the National Offshore Petroleum Titles Administrator (NOPTA) and the Department of the responsible State Minister (DEMIRS) ASAP after orally reporting the incident;
- Complete a written report for all reportable incidents using a format consistent with the NOPSEMA Form FM0831 – Reportable Environmental Incident (**Appendix E**) which must be submitted to NOPSEMA ASAP, but within three (3) days of the incident or of its detection by Woodside; and
- Provide a copy of the written report to the NOPTA and DEMIRS, within seven (7) days of the written report being provided to NOPSEMA.

AMSA will be notified of oil spill incidents ASAP after their occurrence, and DCCEEW notified if MNES are affected by the oil spill incident.

7.11.5.2 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 7.10**.

7.11.5.2.1 Notification

NOPSEMA will be notified of all recordable incidents, according to the requirements of Regulation 50(2), no later than 15 days after the end of the calendar month using the NOPSEMA Form – Recordable Environmental Incident Monthly Summary Report (**Appendix E**) detailing:

- All recordable incidents that occurred during the calendar month;
- All material facts and circumstances concerning the recordable incidents that the operator knows or is able, by reasonable search or enquiry, to find out;
- Any action taken to avoid or mitigate any adverse environment impacts of the recordable incidents;
- The corrective action that has been taken, or is proposed to be taken, to prevent similar recordable incidents; and
- The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.

7.11.5.3 Other External Reporting Requirements and Notifications

In addition to the notification and reporting of environmental incidents defined under the Environment Regulations and Woodside requirements, **Table 7-9** describes the incident reporting requirements that also apply in the PAA if a spill originates from a vessel.

Table 7-9: External incident reporting requirements

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact details
Any marine incidents during Petroleum Activities Program	Vessel Master	AMSA	Incident Alert Form 18 as soon as reasonably practicable Within 72 hours after becoming aware of the incident, submit Incident Report Form 19	AMSA	reports@amsa.gov.au
Oil pollution incidents in Commonwealth Waters	Vessel Master	AMSA Rescue Coordination Centre (RCC)	As per Article 8 and Protocol I of MARPOL within two hours via the national emergency 24-hour notification contacts and a written report within 24 hours of the request by AMSA	AMSA RCC Australia	If the ship is at sea, reports are to be made to: Free call: 1800 641 792 Phone: 08 9430 2100 (Fremantle)
Oil pollution incidents in Commonwealth Waters	Vessel Master	AMSA	Without delay as per Protection of the Sea Act, part II, section 11(1), AMSA RCC notified verbally via the national emergency 24-hour notification contact of the hydrocarbon spill; follow up with a written Pollution Report ASAP after verbal notification	RCC Australia	Phone: 1800 641 792 or +61 2 6230 6811 AFTN: YSARYCYX
Any oil pollution incident which has the potential to enter a National Park or requires oil spill response activities to be conducted within a National Park	Vessel Master	DCCEEW	Reported verbally, ASAP	Director of National Parks	Phone: 02 6274 2220
Activity causes unintentional death of or injury to fauna species listed as Threatened or Migratory under the EPBC Act	Vessel Master	DCCEEW	Within seven days of becoming aware	Secretary of the DCCEEW	Phone: 1800 803 772 Email: protected.species@environment.gov.au

7.12 Emergency Preparedness and Response

7.12.1 Overview

Under Regulation 22(8), the implementation strategy must contain an oil pollution emergency plan (OPEP) and provide for the updating of the OPEP. Regulation 22(9) outlines the requirements for the OPEP which must include adequate arrangements for responding to and monitoring of oil pollution.

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 7-10**.

Table 7-10: 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)(6), 22(2)	Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**).
Describes the OPEP	Regulation 22(8)	EP: Woodside's oil pollution emergency plan has the following components: • Woodside Oil Pollution Emergency Arrangements (Australia) • Operations Oil Pollution First Strike Plan (**Appendix G**) • Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**).
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 D**). NRC Operations Oil Pollution First Strike Plan (**Appendix G**).
Details the arrangements for updating and testing oil pollution response arrangements	Regulation 22(8)(12)(13)(14)	Environment Plan: **Section 7.12.7**. Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**).
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 D**).
Demonstrate 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).

7.12.2 Emergency Response Training

Regulation 22(4) requires that the implementation strategy includes measures to ensure that employees and contractors have the appropriate competencies and training. Woodside has conducted a risk-based training needs analysis on positions required for effective oil spill response. Following the mapping of training to Woodside identified competencies, training was then mapped to positions based on their required competencies (**Table 7-11**).

Table 7-11: Emergency Response Training Requirements

IMT Position	Minimum Competency
Corporate Incident Management Team (CIMT) Incident Commander and Deputy Incident Commander	• IMT Fundamentals Course (internal course) or equivalent • ICS 100/200 • IMO3 or equivalent spill response specialist level with an oil spill response organisation (OSRO) • Participation in L2 activation, exercise or skills maintenance
Operations, Planning, Logistics and Finance Sections, and other rostered members of the CIMT	• IMT Fundamentals Course or equivalent • ICS 100/200 • Oil spill theory • Participation in L2 activation, exercise or skills maintenance
Environment Unit Leader	• IMT Fundamentals Course • ICS 100/200 • IMO2 or equivalent spill response specialist level with an OSRO • Participation in L2 activation, exercise or skills maintenance
Note on competency/equivalency	
In 2023 Woodside undertook a review of incident and crisis systems, processes and tools to assess whether these were fit-for purpose and has rolled out a change to the Crisis and Emergency Management training and the oil spill response training requirements for IMT roles. The revised IMT Fundamentals training Program aligns with the performance requirements of the *PMAOMIR320 – Manage Incident Response Information* and *PMAOM0R418 - Coordinate Incident Response.* In 2023, Woodside took the decision to align its global incident command arrangements to the Incident Command System (ICS). As such all rostered members of the Incident Management Team are trained up to ICS 200. In addition to baseline incident management training, all rostered members of the CIMT undertake a level of hydrocarbon spill response training. Depending upon the role, this may take the form of IMO training or completion of Woodside's internal oil spill training course (OSREC) which involves the completion of two online AMSA Modules (Introduction to National Plan and Incident Management; and Introduction to Oil Spills) and face-to-face training. Woodside Learning Services is responsible for collating and maintaining personnel training records. The HSP Dashboard reflects the competencies required for each oil spill role (IMT/operational).	

7.12.3 Emergency Response Preparation

The Corporate Incident Management Team (CIMT) based in Woodside's head office in Perth, is the onshore coordination point for an offshore emergency. The CIMT is staffed by a roster of appropriately skilled personnel available on call 24 hours a day. The CIMT, under the leadership of the CIMT Leader, supports the site-based Incident Management Team by providing additional support in areas such as operations, logistics, planning, people management and public information (corporate affairs). A description of Woodside's Incident Command Structure and arrangements is further detailed in the Woodside Oil Pollution Emergency Arrangements (Australia).

Woodside will have a number of Emergency Response Plans (ERP) in place relevant to the Petroleum Activities Program. The ERP provides procedural guidance specific to the asset and location of operations to control, coordinate and respond to an emergency or incident.

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.

7.12.3.1 Initial Response to Facility Incident

The facility is equipped with ESD systems designed to protect personnel, the facility and the environment from unsafe operating conditions and catastrophic situations.

ESD systems are provided as a means of isolation in response to process upsets and facility conditions (including associated flowlines and risers) that could result in loss of hydrocarbon inventories, or to reduce the potential impact from a hydrocarbon loss of containment event on the facility. Provision has been made 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 pipelines) is the NRC Emergency Response Plan. 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 Emergency Response Plan covers key ERP relevant to the export pipelines, as well as other major pipelines on Woodside's NWS facilities. The NRC Operations Oil Pollution First Strike Plan provides immediate actions required to commence a response (**Appendix G**). Vessels will 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 NRC Operations 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 MC to be used for hydrocarbon spill response during the Petroleum Activities Program, as detailed in **Appendix D**.

7.12.4 Oil and Other Hazardous Materials Spill

A significant hydrocarbon spill 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 Oil Pollution Emergency Arrangements (OPEA) (Australia) document, supported by the NRC Operations Oil Pollution First Strike Plan which provides tactical response guidance to the activity/area (**Appendix G)** and the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) (**Appendix D**), 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. AMSA and Woodside have a Memorandum of Understanding in place to support Woodside in the event of a hydrocarbon spill.

The NRC Operations Oil Pollution First Strike Plan provides immediate actions required to commence a response (**Appendix G)**.

Support vessels will 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 NRC Operations 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, performance standards and MC to be used for oil spill response during the Petroleum Activities Program, as detailed in **Appendix D**.

7.12.5 Emergency and Spill Response

Woodside categorises incidents in relation to response requirements as follows:

7.12.5.1 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.

7.12.5.2 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.

7.12.5.3 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.

7.12.6 Emergency and Spill Response Drills and Exercises

Woodside's capability to respond to incidents will be tested periodically, in accordance with the Emergency and Crisis Management Procedure. The scope, frequency and objective of these tests is described in **Table 7-12**. Emergency response testing 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 reference points developing and scheduling emergency and crisis management exercises. External participants may be invited to attend exercises (e.g., government agencies, specialist service providers, oil spill response organisations, or industry members with which Woodside has mutual aid arrangements).

The overall objective of exercises is to test procedures, skills and the teamwork of the Emergency Response and Command Teams in their ability to respond to major accident/major environment events. After each exercise, the team holds a debriefing session, during which the exercise is reviewed. Any lessons learned or areas for improvement are identified and incorporated into revised procedures, where appropriate.

Table 7-12: Testing of Response Capability

Response Category	Scope	Response Testing Frequency	Response Testing Objectives
Level 1 Response	Exercises are project / activity 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 exercises test elements of the Oil Pollution First Strike Plan (**Appendix G**). Emergency drills are scheduled to test other aspects of the Emergency Response Plan.
Level 2 Response	Exercises are facility / vessel specific	A minimum of one Emergency Management exercise is conducted biennially.	Testing both the facility IMT response and/or that of the CIMT following handover of incident control.
Level 3 Response	Exercises are relevant to all Woodside assets	The number of CMT exercises conducted each year is determined by the Chief Executive Office, in consultation with the Vice President of Security and Emergency Management.	Test Woodside's ability to respond to and manage a crisis level incident.

7.12.7 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. So that 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 so that the controls are consistent. The overall objective of testing these arrangements is so that Woodside maintains an ability to respond to a hydrocarbon spill, specifically so that:

- Relevant responders, contractors and key personnel understand and practise their assigned roles and responsibilities;
- Response arrangements and actions to validate response plans are tested; and
- 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. Additional activities or activity locations are not anticipated to occur; however, if they do, testing of relevant response arrangements will be undertaken as soon as practicable.

In addition to the testing of response capability described in **Table 7-11**, up to eight formal exercises are planned annually, across Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

7.12.7.1 Testing of Arrangements Schedule

Woodside's Testing of Arrangements Schedule (**Figure 7-7**) aligns with international good practice for spill preparedness and response management; the testing is compatible with the International Petroleum Industry Environmental Conservation Association Good Practice Guide and the Australian Institute for Disaster Resilience (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.

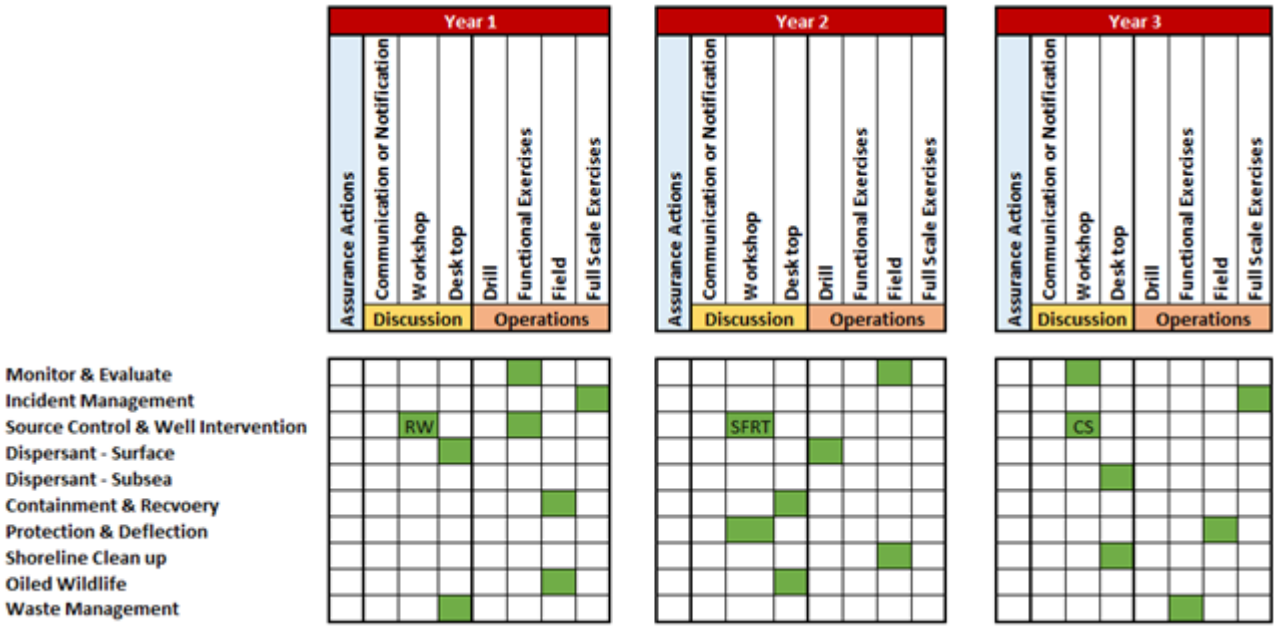


Figure 7-7: Indicative three-yearly testing of arrangements schedule

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 shoreline assessment, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment.

The vertical columns relate to how hydrocarbon spill arrangements will be tested over the three year rolling schedule. The 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).

7.12.8 Cyclones and Dangerous Weather Preparation

Tropical cyclones and other severe weather events are a potential risk to the safety and health of personnel and can potentially cause spills of hazardous materials into the environment from infrastructure and/or damaged vessels.

Facilities and relevant support vessels on hire to Woodside receive regular forecasts from Woodside Meteorologists, who liaise closely with the Bureau of Meteorology (BOM). If a cyclone (or severe weather event) is forecast, the path and its development is plotted and monitored using the BoM data. If there is the potential for the cyclone (severe weather event) to affect the Petroleum 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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9. GLOSSARY AND ABBREVIATIONS

Acronym	Description
1TL	first trunkline
AC	alternating current
AEP	Angel export pipeline
AFMA	Australian Fisheries Management Authority
AHV	anchor handling vessel
AHO	Australian Hydrographic Office
AIMS	Australian Institute of Marine Science
ALARP	as low as reasonably practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ANZECC	Australian and New Zealand Environment and Conservation Council
AP	Angel production
APPEA	Australian Petroleum Production and Exploration Association
ASV	accommodation support vessel
ATSIHP Act	*Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
AUSREP	Australian Ship Reporting System
AUV	autonomous underwater vehicles
AW	abandoned wells with wellhead
BDV	blowdown valve
BIA	biologically important area
BoM	Bureau of Meteorology
BTEX	benzene, toluene, ethylbenzene and xylenes
CAES	Catch and Effort System
CAPEX	capital expenditure
CCR	central control room
CDU	control distribution unit
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CEO	Chief Executive Officer
CFA	Commonwealth Fisheries Association
CI	continuous improvement
CIMT	Corporate Incident Management Team
CMMS	Computerised Maintenance Management System
CMT	Crisis Management Team

Acronym	Description
CoP	cessation of production
CP	cathodic protection
CRA	corrosion-resistant alloy
CS	cost/sacrifice
CV	company values
CVS	Contractor Verification Service
DAA	Department of Aboriginal Affairs
DAWE	Department of Agriculture, Water and the Environment
DC	direct current
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCS	NRC control system
DISER	Department of Industry, Science, Energy and Resources
DMIRS	Department of Mining, Industry Regulation and Safety
DNP	Director of National Parks
DoD	Department of Defence
DoT	Department of Transport
DP	dynamic positioning
EET	emission estimation techniques
EEZ	exclusive economic zone
EFL	electrical flying lead
EIO	East Indian Ocean
EMBA	environment that may be affected
ENVID	environmental risk identification studies
EP	Environment Plan
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
EPO	environmental performance outcome
EPS	environment performance standard
EoFL	end of field life
ERP	Emergency Response Plan
ESD	ecologically sustainable development
ETA	exploration wells temporarily abandoned
EVP	Executive Vice President
FEED	front-end engineering and design
FFS	fit for service
FPU	floating production unit
FPSO	floating production, storage and offloading

Acronym	Description
GHG	greenhouse gas
GP	good industry practice
GWA	Goodwyn Alpha
GWS	Global Wells and Seismic
HAZID/ENVID	hazard identification studies
HCR	hydraulic control router
HFL	hydraulic flying lead
HP	high pressure
HPU	hydraulic power unit
HQ	hazard quotient
HSE	health, safety and environment
HSEC	Health, Safety and Environment Coordinator
HSEQ	health, safety, environment and quality
HVAC	heating, ventilation and air conditioning
ICLDP	Incident and Crisis Leaders Development Program
IUCN	International Union for the Conservation of Nature
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
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 Organisation of Standardisation
ISQG	interim sediment quality guideline
ISSoW	integrated safe system of work
ISV	IMMR support vessel
JRCC	Joint Rescue Coordination Centre
KBSF	King Bay Supply Facility
KGP	Karratha Gas Plan
KEF	key ecological feature
km	Kilometre
KPI	key performance indicator
L	Litres
LAT	lowest astronomical tide
LBL	long baseline
LCS	legislation, codes and standards
LD	Lambert Deep

Acronym	Description
LDA	Lambert Deep
LNG	liquefied natural gas
LOT	Leak- off testing
LP	low pressure
LTO	licence to operate
LW	Lambert West
MAEs	major accident events
MAH	monocyclic aromatic hydrocarbons
MBES	multibeam echo sounder
MEEs	major environmental events
MEG	monoethylene glycol
METL	Maintenance Engineering Team Leader
MFO	Marine Fauna Observer
MC	measurement criteria
MNES	matters of environmental significance
MoC	management of change
MODU	mobile offshore drilling unit
MOPO	Manual of Permitted Operation
MoU	Memorandum of Understanding
MPPE	macro porous polymer extraction
MSIN	Maritime Safety Information Notification
MSPS	Management System Performance Standards
MW	megawatts
NDC	nationally determined contributions
NDT	non-destructive testing
NGA	Nganhurra
NGERS	National Greenhouse and Energy Reporting Scheme
NIMS	non-indigenous marine species
NLPG	National Light Pollution Guidelines
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NORM	naturally occurring radioactive material
NPI	national pollutant inventory
NRC	North Rankin Complex

Acronym	Description
NTM	Notice to Mariners
NWBM	non-water based muds
NWMR	North West Marine Region
NWS	North West Shelf
NZE	net zero emissions
OCIMF	Oil Companies International Marine Forum
OCNS	Offshore Chemical Notification Scheme
OIM	Offshore Installation Manager
OIW	oil in water
OMDAMP	Offshore Marine Discharges Adaptive Management Plan
OPEP	Oil Pollution Emergency Plan
OPEX	operational expenditure
OPGGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth)
OSM	Operational and Scientific Monitoring
OSPAR Convention	Convention for the Protection of the Marine environment of the North-East Atlantic
OSREC	Oil Spill Response Skills Enhancement Course
OSRO	Oil Spill Response Organisation
OVID	Offshore Vessel Inspection Database
OVMSA	Offshore Vessel Safety Management System Assessment
PAA	Petroleum Activities Area
PAH	polycyclic aromatic hydrocarbon
PBA	pre-emptive baseline areas
PCR	power and communication router
PCS	process control system
PFTIMF	Pilbara Fish Trawl Interim Managed Fishery
PHD	Process Historian Database
PJ	professional judgement
PLF	Pilbara Line Fishery
PLONOR	pose little or no risk
PLR	pig launch receivers
PMST	Protected Matters Search Tool
PEC	predicted effects concentration
PNEC	predicted no-effect concentration
POB	personnel on board
PoW	octanol-water partition
PSM	process safety management

Acronym	Description
PSRA	process safety risk assessment
PSV	pressure safety valves
PSZ	petroleum safety zone
PTMF	Pilbara Trap Managed Fishery
PTS	permanent threshold shift
PW	produced water
PWCS	primary water/condensate separators
RBA	risk based analysis
RBI	risk based inspection
RCC	Rescue Coordination Service
RESDV	riser emergency shutdown valves
rms SPL	root square mean sound pressure level
RO	reverse osmosis
ROV	remotely operated vehicle
SBP	sub bottom profiling
SCC	safety and environment critical component
SCE	safety and environment critical element
SCE	solids control equipment
SCEW	Standing Council on Environment and Water
SCM	subsea control module
SCSSV	surface controlled sub-surface safety valves
SDU	subsea distribution unit
SEL	sound exposure level
SIMAP	Spill Impact Mapping and Analysis Program
SOPEP	Ship Oil Pollution Emergency Plan
SSIV	subsea isolation valve
SSPL	subsea pipeline
SSS	side scan sonar
SV	societal values
SVP	Senior Vice President
TAP	Threat Abatement Plan
TEG	triethylene glycol
TFCFD	Taskforce on Climate-Related Financial Disclosures
TPH	total petroleum hydrocarbon
TTS	temporary threshold shift
UK	United Kingdom

Acronym	Description
UPS	uninterruptable power system
USBL	ultra-short baseline
USEPA	United States Environmental Protection Agency
USV	uncrewed surface vessel
UTA	umbilical termination assemblies
VOC	volatile organic compound
VP	Vice President
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WBM	water-based muds
WET	whole effluent toxicity
WHA	World Heritage Area
WMS	Woodside Management System
WOMP	Well Operations Management Plan

APPENDIX A: WOODSIDE POLICIES

Environment and Biodiversity Policy

OBJECTIVE

Woodside recognises the intrinsic value of nature and the importance of conserving biodiversity and ecosystem services to support the sustainable development of our society. We are committed to doing our part. We understand and embrace our responsibility to undertake activities in an environmentally sustainable way.

PRINCIPLES

Woodside commits to:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision making processes.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Not undertaking new 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.

Reviewed by the Woodside Energy Group Ltd Board in December 2023.

[1] Definition of Forest: 'trees higher than 5 metres and a canopy cover of more than 10 percent on the land to be cleared'.

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 2023.

Climate Policy

BACKGROUND

The Intergovernmental Panel on Climate Change has stated that "it is unequivocal that human influence has warmed the atmosphere, ocean and land". An objective of the Paris Agreement is to hold "the increase in the global average temperature to well below 2ºC above pre-industrial levels" and to pursue "efforts to limit the temperature increase to 1.5ºC". Many countries have set targets to reduce greenhouse gas emissions, including by changing the way they produce and consume energy.

OBJECTIVE

Woodside's objective is to thrive in this energy transition as a low cost, lower carbon energy provider.

PRINCIPLES

Woodside aims to achieve the objective by:

- Setting science-based[1] near, mid, and long-term net emissions reduction targets that are consistent with Paris-aligned[2] scenarios, covering equity scope 1 and 2 emissions, both operated and non-operated.[3]
- Developing and operating oil and gas projects in a manner that is consistent with these targets. This includes the deployment of lower-emission technologies (Design Out), supporting efficient operations (Operate Out) and use of robust offsets (Offset) as methods to reduce and offset greenhouse gas emissions.
- Investing in new energy products and lower carbon services to reduce customers' emissions (part of Woodside's Scope 3 emissions), including but not limited to hydrogen, ammonia and carbon capture, utilisation and storage.
- Publishing transparent climate-related disclosures aligned to the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) or other recognised global reporting standards.
- Aligning our advocacy to the principles of this Climate Policy.

[1] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of "science-based" (published 2021) which states "targets are considered 'science-based' if they are in line with what the most recent climate science sets out is necessary to meet the goals of the Paris Agreement—limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius.". See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related-disclosures-prototype.pdf (Appendix A).

[2] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of "Paris-aligned scenarios" (published 2021) which states "scenarios consistent with limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius." See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related-disclosures-prototype.pdf (Appendix A).

[3] Equity emissions means the share of the total emissions arising from an activity that are attributable to Woodside in proportion to Woodside's ownership interest in the activity, irrespective of whether Woodside operates the activity. Operated emissions are the total emissions arising from an activity that Woodside operates, irrespective of Woodside's ownership interest.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venture participants engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2023.

APPENDIX B: RELEVANT REQUIREMENTS

The below table refers to Commonwealth Legislation related to the project.

Commonwealth Legislation	Legislation Summary
Air Navigation Act 1920 Air Navigation Regulations 1947 Air Navigation (Aerodrome Flight Corridors) Regulations 1994 Air Navigation (Aircraft Engine Emissions) Regulations 1995 Air Navigation (Aircraft Noise) Regulations 1984 Air Navigation (Fuel Spillage) Regulations 1999	This Act relates to the management of air navigation.
Australian Maritime Safety Authority Act 1990	This Act establishes a legal framework for the Australian Maritime Safety Authority (AMSA), which represents the Australian Government and international forums in the development, implementation and enforcement of international standards including those governing ship safety and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters.
Australian Radiation Protection and Nuclear Safety Act 1998	This Act relates to the protection of the health and safety of people, and the protection of the environment from the harmful effects of radiation.
Biosecurity Act 2015 Quarantine Regulations 2000 Biosecurity Regulation 2016 Australian Ballast Water Management Requirements 2017 Biosecurity Amendment (Biofouling Management) Regulations 2021	This Act provides the Commonwealth with powers to take measures of quarantine, and implement related programs as are necessary, to prevent the introduction of any plant, animal, organism or matter that could contain anything that could threaten Australia's native flora and fauna or natural environment. The Commonwealth's powers include powers of entry, seizure, detention and disposal. This Act includes mandatory controls on the use of seawater as ballast in ships and the declaration of sea vessels voyaging out of and into Commonwealth waters. The Regulations stipulate that all information regarding the voyage of the vessel and the ballast water is declared correctly to the quarantine officers. The Biofouling Management Regulations requires ships to report information about biofouling management and the voyage history of the ship in the past 12 months through a pre-arrival report.
Environment Protection and Biodiversity Conservation Act 1999 Environment Protection and Biodiversity Conservation Regulations 2000	This Act protects matters of national environmental significance (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.

Commonwealth Legislation	Legislation Summary
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.
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.

Commonwealth Legislation	Legislation Summary
Recycling and Waste Reduction (Mandatory Product Stewardship—Mercury-added Products) Rules 2021 (Minamata Convention on Mercury 2017)	This Convention is an agreement to protect human and environmental health from the effects of releases of mercury and mercury-containing compounds to the environment. The Convention was ratified by Australia in December 2021 and is implemented in Commonwealth law under the Recycling and Waste Reduction (Mandatory Product Stewardship – Mercury added Products) Rules 2021).
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.
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	This Act seeks “to preserve and protect places, areas and objects of particular significance” to Aboriginal people. Under the Section 9 and 10 provisions of the Act, the Minister for the Environment may declare significant Aboriginal areas temporarily or permanently protected if they are considered under threat. Similar declarations regarding Aboriginal objects can be made under Section 12. Under Section 22 of the Act, the contravention of any of these declarations is an offence. Additionally, the discovery of any Aboriginal remains must be reported to the Minister under Section 20. Damage or interference with Aboriginal objects or places is not an offence under the ATSIHO Act except within Victoria under Section 21U.
Underwater Cultural Heritage Act 2018 Underwater Cultural Heritage Guidance for Offshore Developments DRAFT Guidelines to Protect Underwater Cultural Heritage.	The Act prescribes penalties for damage to protected Underwater Cultural Heritage without a permit under Section 30 or in contravention of a permit under Section 28. Protected Underwater Cultural Heritage is prescribed in Section 16 to automatically include the remains and associated artefacts of any vessel or aircraft that has been in Australian waters for 75 years, whether known or unknown. This protection is also extended to Underwater Cultural Heritage in Commonwealth waters specified by the Environment Minister under Section 17. Without a declaration under this section, Aboriginal Underwater Cultural Heritage is not protected under the UCH Act.

APPENDIX C-1: WOODSIDE MASTER EXISTING ENVIRONMENT DOCUMENT

Description of the Existing Environment

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1. INTRODUCTION

1.1 Purpose

This document applies, where indicated in the relevant Environment Plan (EP), to Woodside Energy Ltd. (Woodside) activities and operations.

1.2 Scope

This document describes the existing environment within the Woodside areas of activity located in Commonwealth waters off north-western Western Australia (WA), with a focus on the North-west Marine Region (NWMR) (

Figure 1-1). This document includes details of the particular and relevant values and sensitivities of the environment as required by the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) (OPGGS (E) Regulations) to inform the impact and risk evaluation of Woodside's activities within the NWMR. Furthermore, the key values of the South-west Marine Region (SWMR) and the North Marine Region (NMR) are summarised to encompass areas outside the NWMR. This is with reference to the environment that may be affected (EMBA), as defined and described in individual EPs, for unplanned hydrocarbon spill risks. Additional information appropriate to the nature and scale of the impacts and risks of activities that may interact with the environment will be used to further inform impact and risk assessments and be included in the Description of the Existing Environment of individual EPs.

This document is informed by a variety of resources that includes: a search of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) for the marine bioregions (NWMR, SWMR and NMR) and the three PMST reports provided in **APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and** NMR; State (WA)/ Commonwealth Marine Park Management Plans, the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) Species Profile and Threats Database (SPRAT), EPBC Act Part 13 statutory instruments (recovery plans, conservation advices and wildlife conservation plans for listed threatened and migratory species); and peer reviewed scientific publications, as well as Woodside and Joint Venture (JV) funded studies and other titleholder funded study findings available in the public domain.

1.3 Review and Revision

The information presented in this document is reviewed and updated on at least a 5-year basis. Key updates are captured in a 'change register'. Material risk may trigger updates within the 5-year review period, as per the OPGGS (E) Regulations. Key updates may include but are not limited to the status of EPBC Act listed species, Part 13 Instruments, policies and guidelines, key advice from external stakeholders and recently published scientific literature.

1.4 Regional Context

Where relevant, the physical, biological and social environments within the areas of interest are discussed with reference to the three marine bioregions of Australia—North-west marine region (NWMR), South-west marine region (SWMR)and North marine region (NMR), the Marine Bioregional Plans has been prepared under section 176 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)[1] (**Table 1-1)**. The NWMR is the focal marine bioregion for the Woodside Description of the Existing Environment as this is currently the location of most of Woodside's activities.

[1] https://www.dcceew.gov.au/environment/marine/marine-bioregional-plans (accessed:04/08/2024)

Table 1-1. Description of the Marine Bioregions

Marine Bioregion	Description
North-west (DSEWPAC, 2012a)	The NWMR includes all Commonwealth waters (from 3 nautical mile (nm) from the Territorial Sea Baseline (TSB) to the 200 nm Exclusive Economic Zone (EEZ) boundary) extending from the WA/Northern Territory border to Kalbarri, south of Shark Bay in WA, covering an area of approximately 1.07 million km^2 and includes extensive areas of shallower waters on the continental shelf, as well as deep areas of abyssal plain where water depths are 5000 m or greater.
South-west (DSEWPAC, 2012b)	The SWMR comprises Commonwealth waters from the eastern end of Kangaroo Island in South Australia to Shark Bay in WA. The region spans approximately 1.3 million km^2 of temperate and subtropical waters and abuts the coastal waters of SA and WA.
North (DSEWPAC, 2012c)	The NMR comprises Commonwealth waters from West Cape York Peninsula to the NT/WA border). The region covers approximately 625,689 km^2 of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas, and abuts the coastal waters of Queensland and the NT.

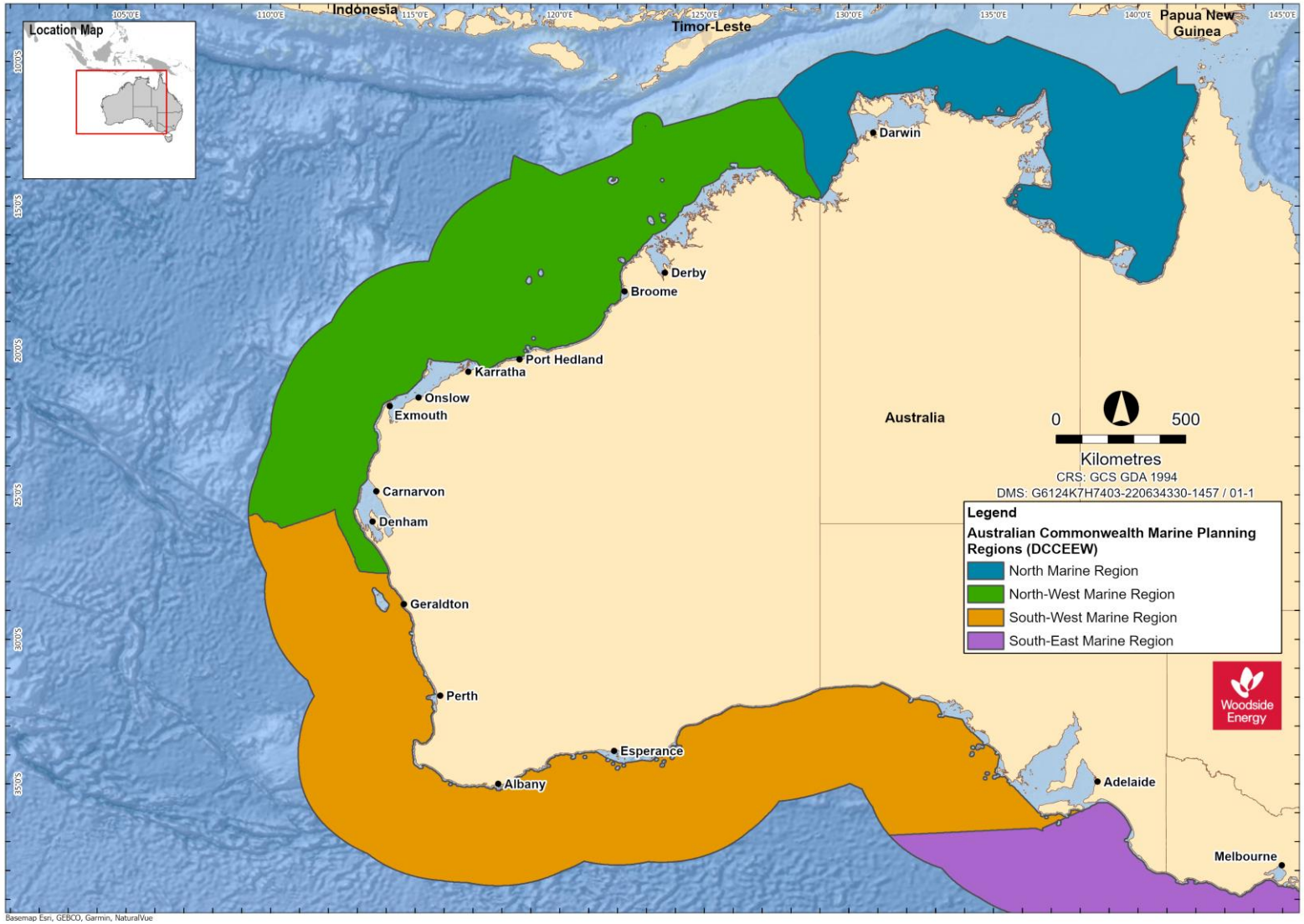


Figure 1-1. Marine Bioregions: North-west (NWMR), South-west (SWMR), North (NMR) and South-East (as defined under the EPBC Act, refer to (DCCEEW, 2021b).

2. PHYSICAL ENVIRONMENT

2.1 Regional Context

The key physical characteristics of the NWMR, SWMR and NMR are presented in **Table 2-1**. The remainder of this section then focuses entirely on the NWMR.

Table 2-1 Key physical characteristics of the NWMR, SWMR and NMR

Bioregion	Key Characteristics
North-west Marine Region	The NWMR experiences a tropical monsoonal climate towards the northern extent of the region, transitioning to tropical arid and subtropical arid within the central and southern areas of the region (DSEWPAC, 2012a).
	The NWMR is part of the Indo-Australian Basin, the ocean region between the north-west coast of Australia and the Indonesian islands of Java and Sumatra. Dominant currents in the Region include: the South Equatorial Current, the Indonesian Throughflow; the Eastern Gyral Current, and the Leeuwin Current (DEWHA, 2007a).
	The seafloor of the NWMR consists of four general feature types: continental shelf; continental slope; continental rise; and abyssal plain and is distinguished by a range of topographic features including canyons, plateaus, terraces, ridges, reefs, and banks and shoals.
South-west Marine Region	The SWMR contains both subtropical and temperate climates, with overall light climatic cycles.
	The SWMR experiences complex and unusual oceanographic patterns, driven largely by the Leeuwin Current and its associated currents that have a significant influence on biodiversity distribution and abundance.
	The major seafloor features of the SWMR include a narrow continental shelf on the West coast to the waters off South-west WA, and a wide continental shelf dominated by sandy carbonate sediments of marine origin in the Great Australian Bight. The region also contains a steep, muddy continental slope, many canyons and large tracts of abyssal plains (DSEWPAC, 2012b).
North Marine Region	The NMR experiences a tropical monsoonal climate with complex weather cycles, including high temperatures and heavy seasonal yet variable rainfall and cyclones, which can be both destructive (loss of seagrass and mangroves) and constructive (mobilisation of sediment into coastal habitats).
	The NMR comprises Commonwealth waters from West Cape York Peninsula to the NT–WA border, covering tropical waters in the Gulf of Carpentaria and Arafura and Timor seas. Currents in the NMR are driven largely by strong winds and tides, with only minor influences from oceanographic currents such as the Indonesian Throughflow and the South Equatorial Current (DSEWPAC, 2012c).
	The seafloor of the NMR consists mainly of a wide continental shelf, as well as other geomorphological features such as shoals, banks, terraces, valleys, shallow canyons and limestone pinnacles.

2.2 Marine Systems of the North-west Marine Region.

The NWMR is divided into three large scale ecological marine systems on the basis of the influence of major ocean currents, seafloor features and eco-physical processes (e.g. climate, tides, freshwater inflow) upon the Region (DSEWPAC, 2012a). The three large scale marine systems approximate the Woodside activity areas within the NWMR (**Figure 2-1**). The key characteristics of each marine system are outlined in **Table 2-2**.

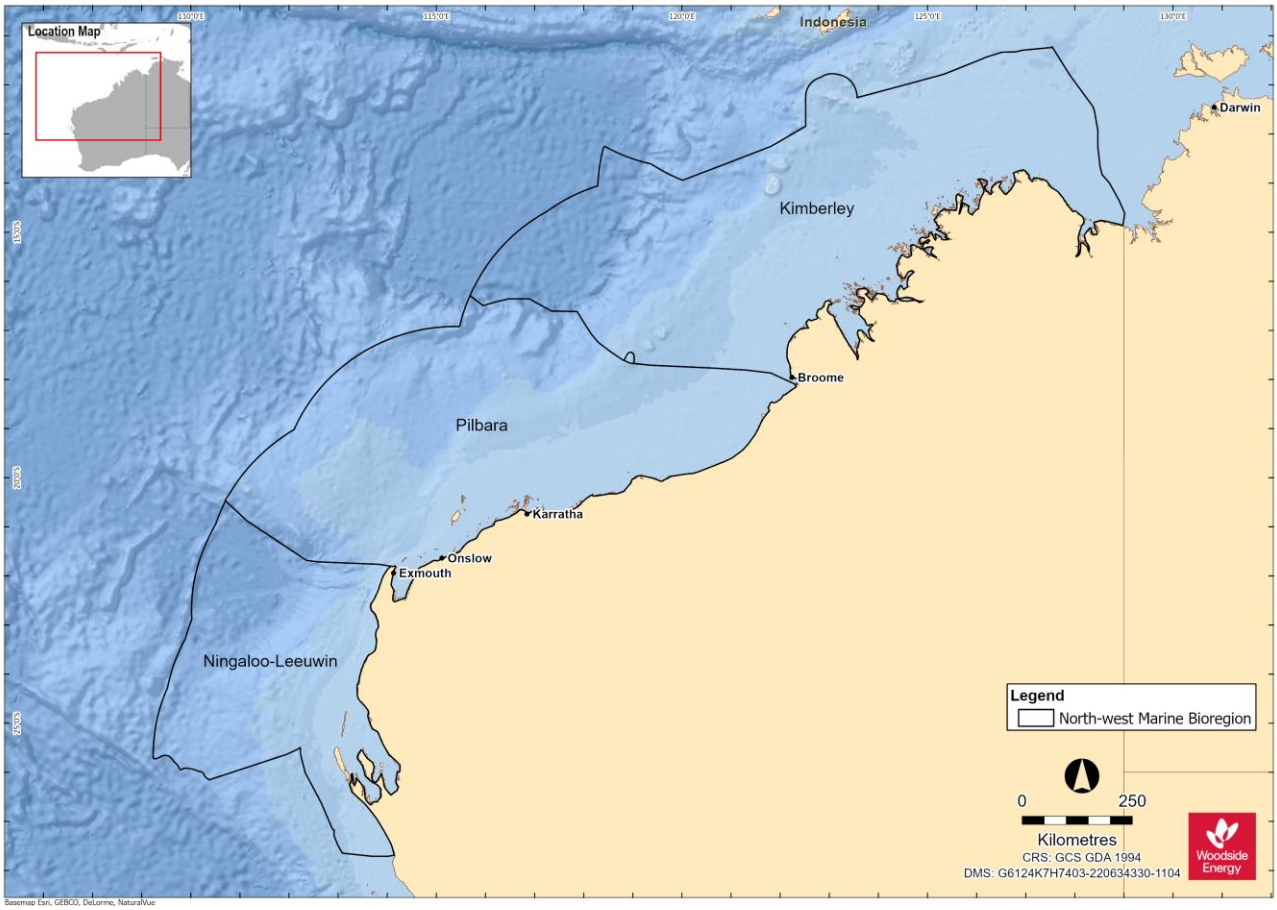


Figure 2-1. The marine systems of the North-west Marine Region (NWMR) (data source: DEWHA 2007a)

Table 2-2. Key characteristics of the Marine Systems of the NWMR

Note: Woodside areas align with the marine systems as described in DEWHA (2007a)

Marine System	Woodside Activity Area	Key Characteristics
Kimberley	Browse	Tropical monsoonal climate Strong influence from Indonesian Throughflow Predominantly tropical Indo-Pacific species Subject to episodic offshore cyclonic activity, rarely crossing the coast Large tidal regimes Freshwater input from terrestrial monsoonal run-off Turbid coastal waters (i.e. light limited systems) Dominated by shelf environments Predominantly hard substrates in inner to mid-shelf environments Includes a number of shelf-edge atolls (i.e. Scott Reef, Rowley Shoals)
Pilbara	North-west Shelf (NWS) / Scarborough	Tropical arid climate Transition between Indonesian Throughflow and Leeuwin Current dominated areas Predominantly tropical species High cyclone activity with frequent crossing of the coast Transitional tidal zone Internal tide activity Large areas of shelf and slope Dry coast with ephemeral freshwater inputs
Ningaloo-Leeuwin	North-west Cape	Subtropical arid climate Leeuwin Current consolidates Transitional tropical/temperate faunal area Higher water clarity in near-shore and offshore environments Narrow shelf and slope Marginal tidal range Seasonal wind forcing more dominant influence on marine environment

2.3 Meteorology and Oceanography

This section describes the general meteorological conditions and oceanography for the NWMR and provides further detail for the three Woodside activity areas (**Table 2-3**). The NWMR is influenced by a complex system of ocean currents that change between seasons and between years, which generally result in its surface waters being warm and nutrient-poor, and of low salinity (DEWHA, 2007a). The mix of bathymetric features, complex topography and oceanography across the whole North-west marine environment has created and supports a globally important marine biodiversity hotspot (Wilson, 2013). The purpose of **Table 2-3** is to provide high-level physical characteristics of the marine environment within and across the NWMR. This subsection does not describe warming trends or discuss forecast trajectories for the NWMR.

Table 2-3 NWMR climate and oceanography summary

Receptor	Description
Meteorology	
Seasonal patterns	The NWMR associated land mass of the Australian continent is characterised as a hot and humid summer climate zone. The broader NWMR experiences variations of a tropical or monsoon climate. In the far North-west (Kimberley), there is a hot summer season from December to March and a milder winter season between April and November. The Pilbara area is described as having a tropical arid climate with high cyclone activity (DEWHA, 2007a). The Pilbara and North-west Cape has a hot summer season from October to April and a milder winter season between May and September with transition periods between the summer and winter regimes.
Air temperature and rainfall	In summer (between September and March), maximum daily temperatures range from 18ºC to 36ºC. During winter (May to July), mean daily temperatures range from 12ºC to 30ºC (BOM, 2023c), refer to **Figure 2-2a** and **b**. Rainfall in the region typically occurs during the summer, with highest falls observed late in the season. This is often associated with the passage of tropical low-pressure systems and cyclones.
Wind	Wind patterns in North-west WA are dictated by the seasonal movement of atmospheric pressure systems. During summer, high-pressure cells produce prevailing winds from the North-west and South-west, which vary between 10 and 13 ms^{-1}. During winter, high-pressure cells over central Australia produce North-easterly to South-easterly winds with average speeds of between 6 and 8 ms^{-1}. Refer to **Figure 2-3** and **b**.
Tropical cyclones	The NWS and Pilbara coast (within the NWMR) experiences more cyclonic activity than any other region of the Australian mainland coast (BOM, 2021a). Tropical cyclone activity typically occurs between November and April and is most frequent in the region during December to March (i.e. considered the peak period), with an average of about one cyclone per month (BOM, 2021a). Refer to **Figure 2-4**.
Oceanography	
Ocean temperature	Waters in NWMR are tropical year-round, with sea surface temperature in open shelf waters reaching ~26°C in summer and dropping to ~22°C in winter. Nearshore temperatures (as recorded for the NWS area) fluctuate more widely on an annual basis from ~<23°C in winter to ~31°C in summer (Hallenberger et al. 2022), indicative of present-day sea surface temperatures, acquired from the CISRO Oceans and Atmosphere database. Refer to **Figure 2-5a** and **b,** for the seasonal variation across and within the NWMR.
Currents	The major surface currents influencing North-west WA flow towards the poles and include the Indonesian Throughflow, the Leeuwin Current, the South Equatorial Current, and the Eastern Gyral Current. The Ningaloo Current, the Holloway Current, the Shark Bay Outflow, and the Capes Current are seasonal surface currents in the region. Below these surface currents are several subsurface currents, the most important of which are the Leeuwin Undercurrent and the West Australian Current. These subsurface currents flow towards the equator in the opposite direction to surface currents (DEWHA, 2007a). Refer to **Figure 2-6**. The offshore waters of the NWMR are characterised by surface and subsurface boundary currents that flow along the continental shelf/slope and are enhanced through inflows from the ocean basins and are an important conduit for the poleward heat and mass transport along the West coast (Wijeratne et al., 2018). Local physical oceanography is strongly influenced by the large-scale water movements of the Indonesian Throughflow (Liu et al. 2015; Sutton et al. 2019). Typically, a warm and well-mixed oligotrophic surface layer, and a cooler and more nutrient rich deeper water layer (Menezes et al. 2013).
Waves	Sea surface waves within the NWMR generally reflect the direction of the synoptic winds and flow predominately from the South-west in the summer and East in winter (Pearce et al., 2003). The NWS within the NWMR is a known area of internal wave generation. Both internal tides and internal waves are thought to be more prevalent during summer months due to the increased stratification of the water column (DEWHA, 2007a). Along the continental slope of the NWMR, strong internal waves and interaction between semi-diurnal tidal currents and seabed topographic features facilitates upwelling events and localised productivity events (Holloway, 2001).
Tides	Tides on the NWS (NWMR) increase as the water moves from deep towards the shallower coast. The highest offshore tides are experienced at the border of the Browse and Canning basins. The smallest tides are experienced at the Exmouth Plateau, near the coast. Tides of the NWS (NWMR) are predominantly semi-diurnal (two highs and two lows each day), but with increasing importance of the diurnal (once per day) inequality at the southern and northern extremities of the NWS.

Receptor	Description
	The tide range—represented by the Mean Spring Range (MSR)—increases northwards along the coast from 1.4 m at North-west Cape (Point Murat) to 7.7 m at Broome, before decreasing again (apart from local amplification in King Sound and Collier Bay) to about 5 m off Cape Londonderry. The MSR then increases again through Joseph Bonaparte Gulf and on up 5.5 m at Darwin (RPS, 2016).

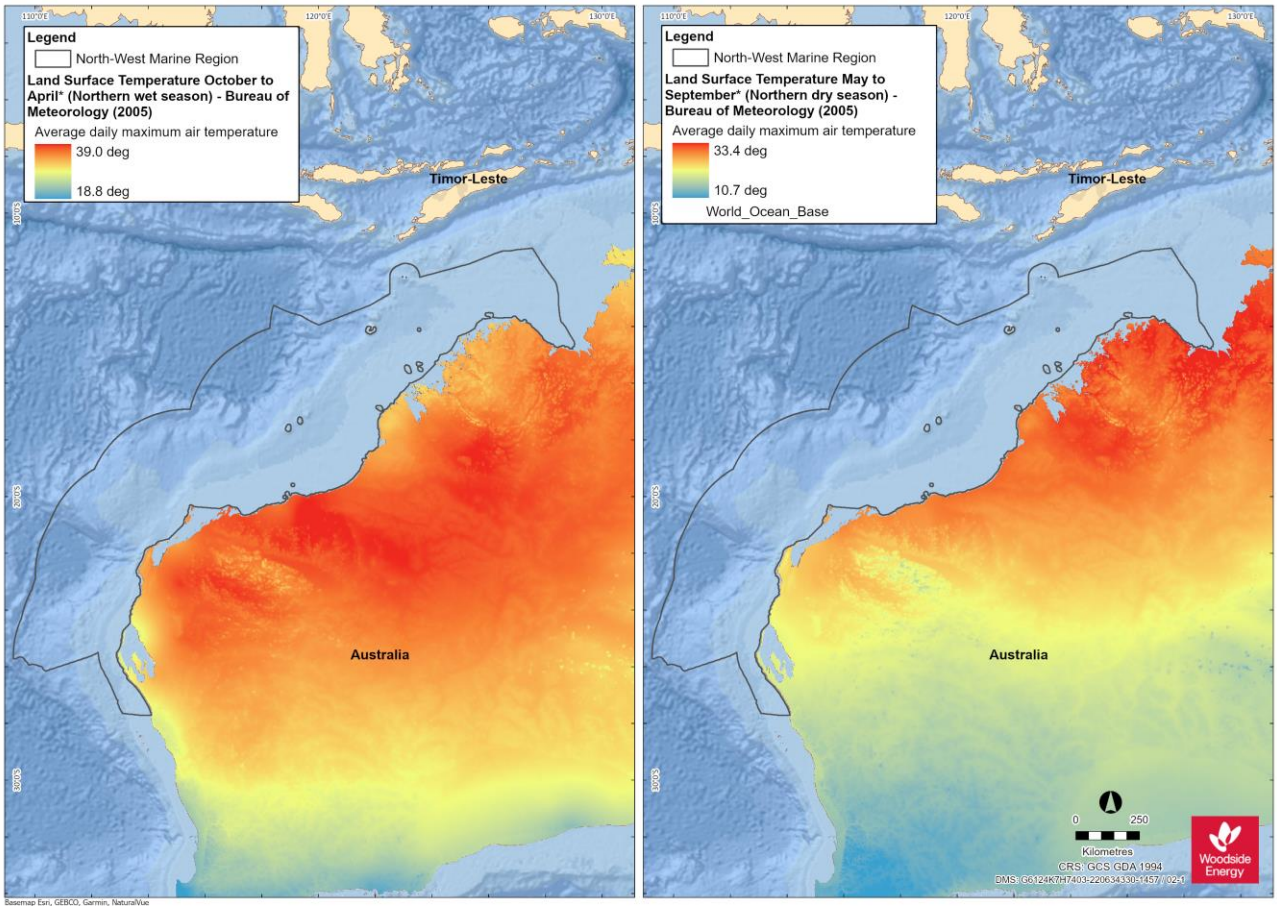


Figure 2-2. Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

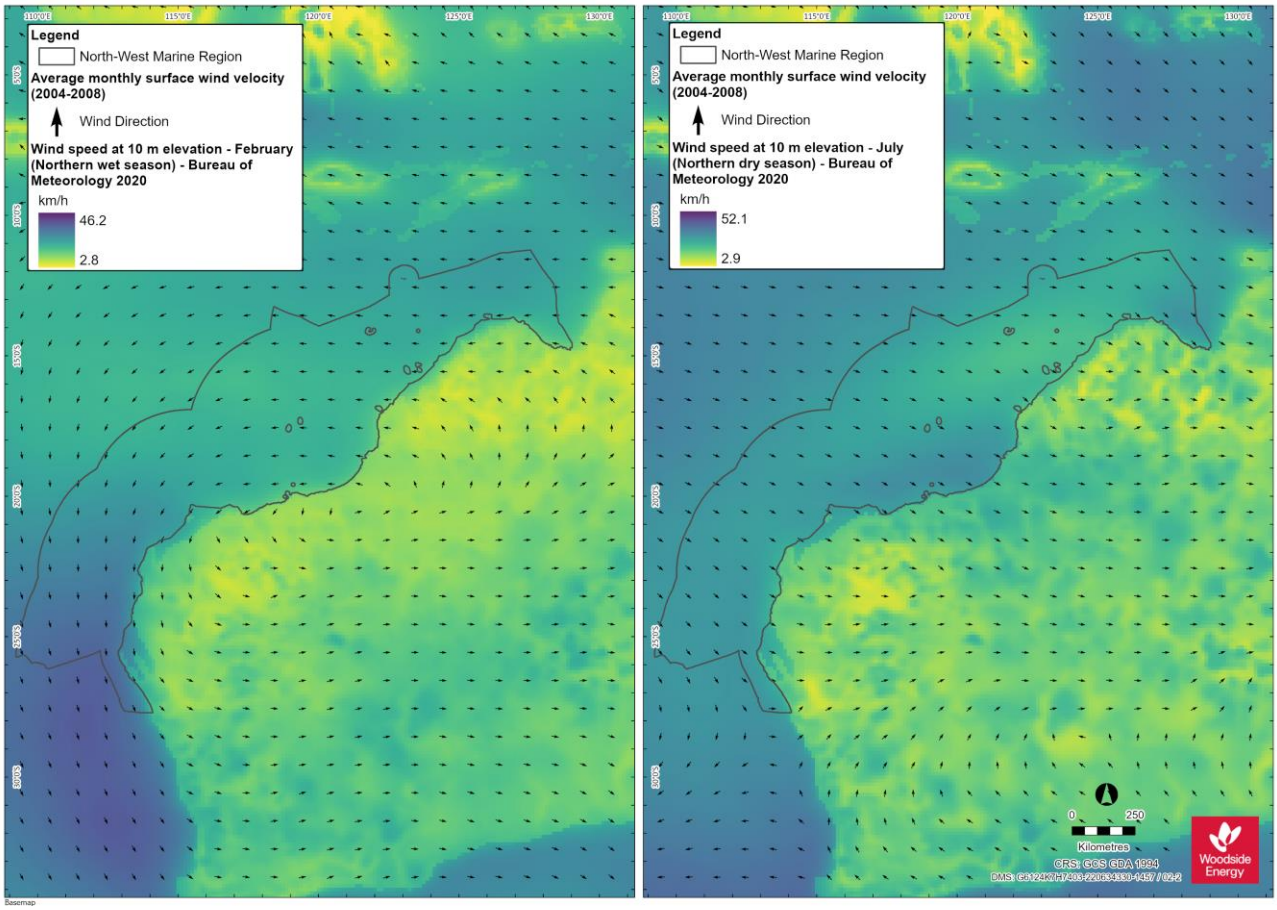


Figure 2-3. Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

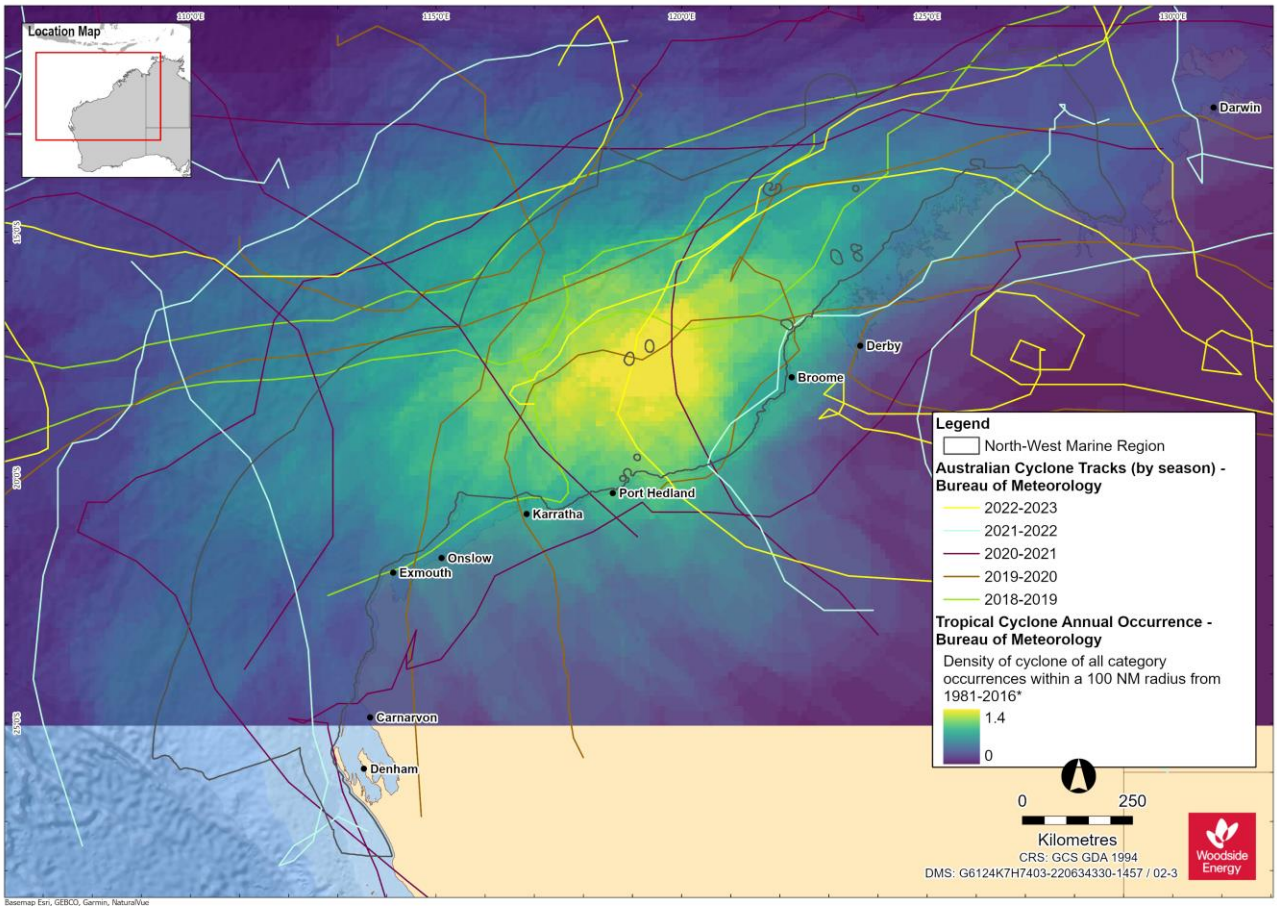


Figure 2-4. Tropical cyclone annual occurrence and cyclone tracks for NWMR

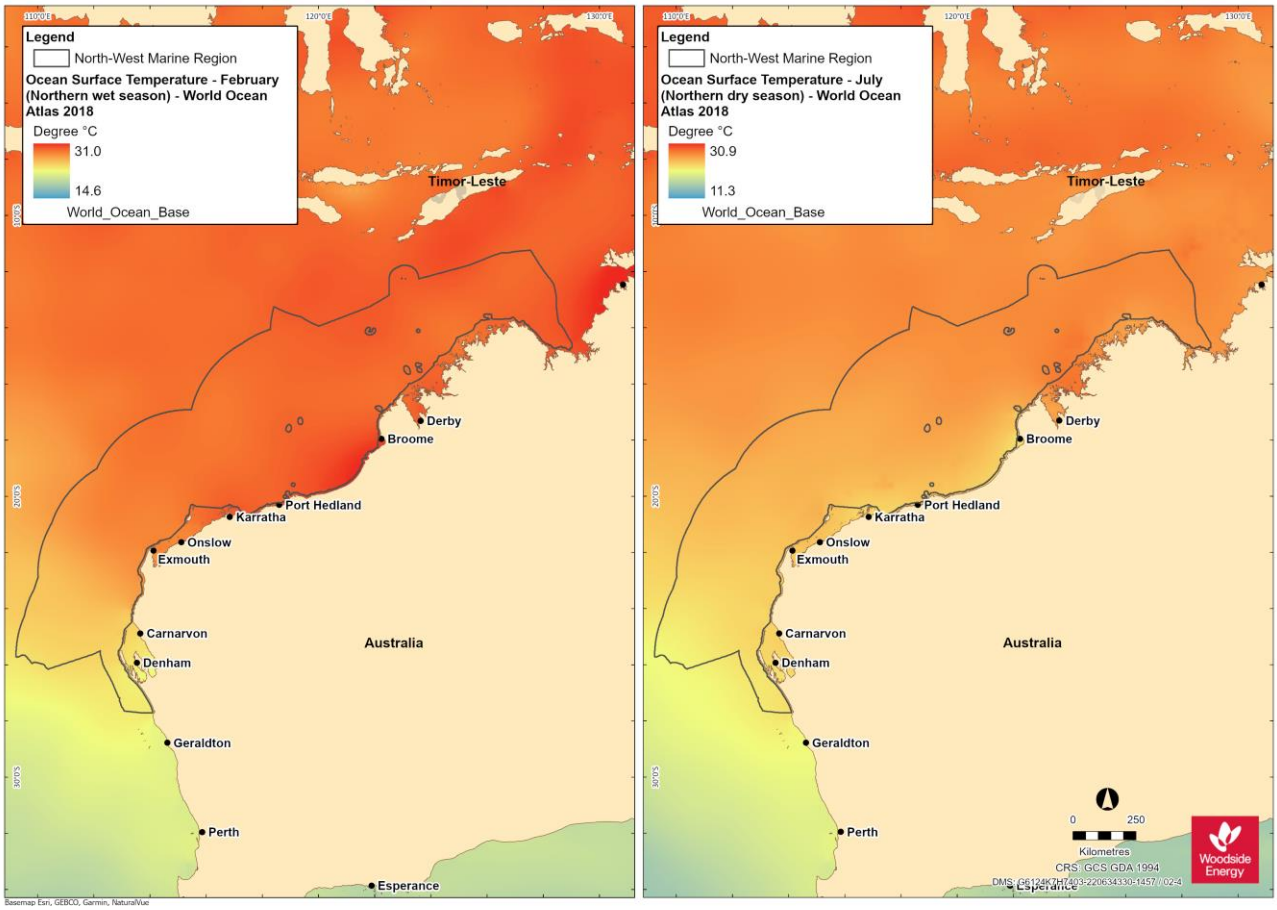


Figure 2-5. Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season) (data source: Locarnini et al**. 2018 in World Ocean Atlas 2018)**

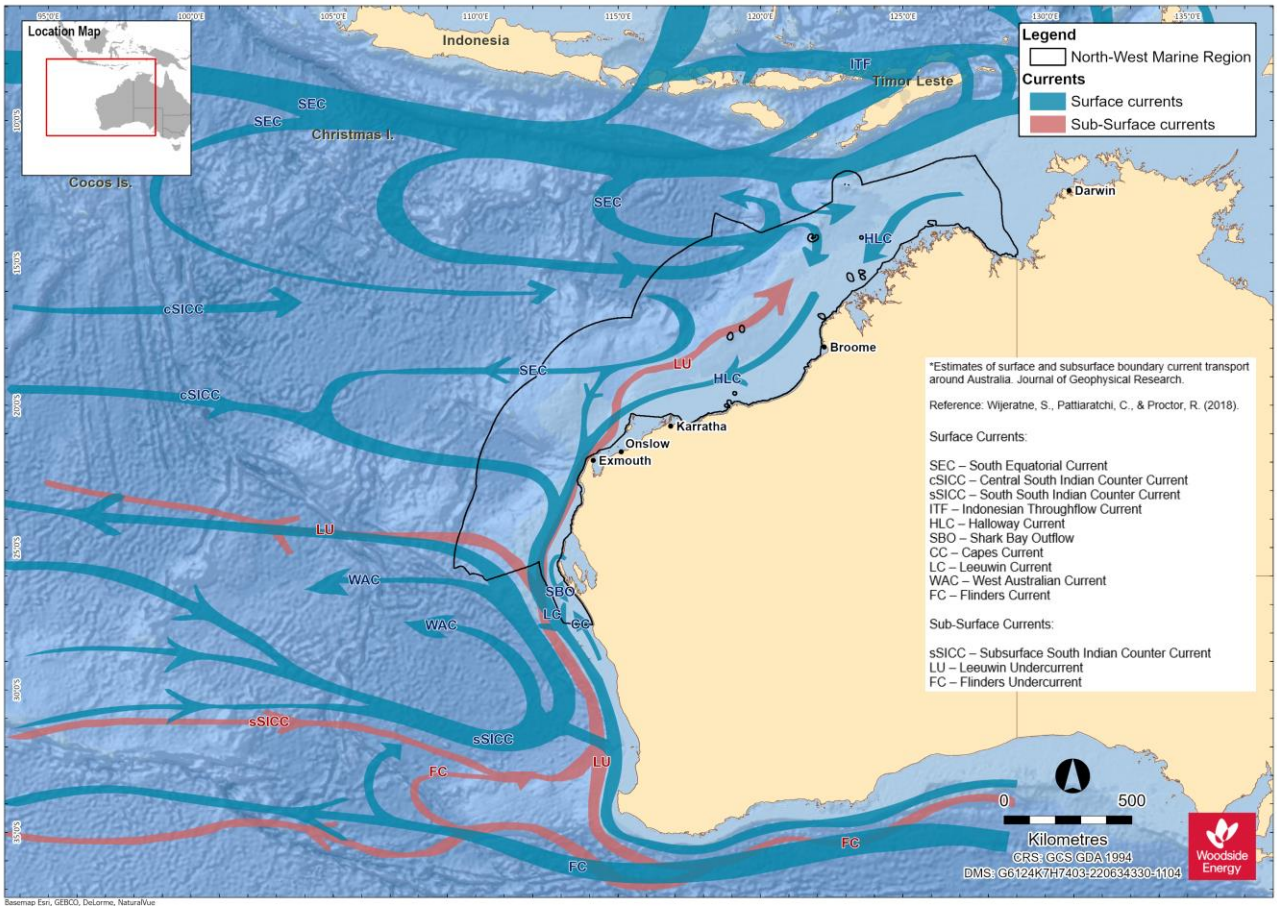


Figure 2-6. Ocean surface and sub-surface currents of the NWMR and wider region (data source: adopted from Wijeratne et al**. 2018)**

2.3.1 Browse

Table 2-4 Summary meteorology and oceanography for Browse (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures and data sources)

Receptor	Description
Meteorology	
Seasonal patterns	The Browse area overlapping the Kimberley marine system experiences tropical monsoon climate with two distinct seasons: the wet season from December to March and dry season from April to November.
Air temperature	The mean annual air temperature recorded at Troughton Island between 2010 and 2020 ranged from 22.5ºC in 2019 to 32.8ºC in 2016 and highest mean monthly air temperatures were recorded for the months of November and December (BOM, 2023a).
Rainfall	Rainfall recorded from Troughton Island in the Browse basin ranged from barely detectable (<1 mm) mean monthly level to >100 mm in December to March, with the highest rainfall recorded for January (reflecting the wet monsoon season of the Kimberley marine system) (BOM, 2023a).
Wind	The dry season experiences high-pressure systems that bring East to South-easterly winds with average wind speeds during the season of approximately 16.6 km/h and maximum wind gusts of 65 km/h. In contrast the wet season brings predominately westerly winds with average wind speeds approximately 17 km/h and maximum gusts exceeding 100 km/h (generally associated with tropical cyclones (MetOcean Engineers, 2005).
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the South-west during March to June and more variable outside this period (Woodside, 2019). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.3.2 North West Shelf / Scarborough

Table 2-5 Summary meteorology and oceanography for the North West Shelf and Scarborough (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures and data sources)

Receptor	Description
Meteorology	
Seasonal patterns	The NWS and Scarborough areas experience the monsoonal climate of the wider NWMR with a distinct wet and dry seasonal regime and transitions periods between seasons.
Air temperature	Air temperatures as measured at the North Rankin A platform on the NWS ranged from a maximum average of 39.8ºC in summer to a minimum average temperature of 15.2ºC in winter (Woodside, 2015).
Rainfall	Rainfall patterns annually reveal the wet season with highest rainfalls during the late summer, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall in the dry season is typically extremely low (Pearce et al. 2003) and **Appendix B**.
Wind	Winds are typically from the southwest during the wet season (summer) and tending from the South-east during the dry season (winter). The summer South-westerly winds are driven by high pressure cells that pass from West to East over the Australian continent. During the winter period, the relative position of the high-pressure cells shifts further North, leading to prevailing South-easterly winds from the mainland (Pearce et al. 2003) and **Appendix B**.
Oceanography	
Currents	The large-scale ocean currents of the NWMR, primarily the Indonesian Throughflow and Leeuwin Current (and Holloway Current), are the primary influence on the NWS and Scarborough areas. The Indonesian Throughflow and Leeuwin Current are strongest during the late summer and winter and flow reversals to the North-east, typically short-lived and weak when there are strong South-westerly winds, can generate localised upwelling on the shelf edge (Holloway and Nye, 1985; James et al. 2004 and Condie et al. 2006).

2.3.3 North-west Cape

Table 2-6 Summary meteorology and oceanography for the North-west Cape (refer to APPENDIX B. Supporting Figures for Section 2.3 Meteorology and Oceanography for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The climate of the NWMR is dry tropical exhibiting a hot summer season and a mild winter season. There are often distinct transition periods between the summer and winter regimes, characterised by periods of relatively low winds.
Air temperature	Air temperatures in the North-west Cape area range from high summer temperatures (maximum average of 38ºC) and mild winter temperatures (minimum average of 11.5ºC) as recorded from the Learmonth Airport (BOM, 2023b).
Rainfall	Rainfall typically occurs during the summer, with highest rainfall during later summer and autumn (mean monthly level to >19 mm), with the highest rainfall recorded during June, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall is typically low in winter (<2 mm) (BOM, 2023b).
Wind	Winds vary seasonally, generally from the South-west quadrant during summer months and the south, south-east quadrant during the autumn and winter months. The summer south-westerly winds are driven by high pressure cells that pass from West to East over the Australian continent. Winds typically weaken and are more variable during the transitional period between the summer and winter seasons, generally between April to August.
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the South-west during March to June and more variable outside this period (Woodside, 2022). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.4 Physical Environment of NWMR

Based on the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4.0, there are eight provincial bioregions that occur within the NWMR, which are based on patterns of demersal fish diversity, benthic habitat and oceanographic data (Commonwealth of Australia, 2006), **Figure 2-7**. Of the eight provincial bioregions that occur within the NWMR, these include four offshore (~65% of total NWMR area) and four shelf (~35% of total NWMR area) bioregions (Baker et al*.,* 2008).

The NWMR is a tropical carbonate margin that comprises an extensive area of shelf, slope and abyssal plain/deep ocean floor, as well as complex areas of bathymetry such as plateau, terraces and major canyons (Harris et al*.*, 2005). A series of reefs are located on the outer shelf/slope of the NWMR, including Ashmore, Cartier, Scott and Seringapatam reefs (Baker et al., 2008). The distribution of seafloor geomorphic features has been systematically mapped over much of the Australian margin and adjacent seafloor. The mapped area can be divided into 10 geomorphic regions, of which the NWMR overlays two; the Western Margin and Northern Margin (Harris et al*.*, 2005). Most of the region consists of either continental slope (61%) or continental shelf (28%) (DEWHA, 2007a) with more than 40% of the NWMR having a water depth less than 200 m. The shallow shelf is contrasted by features such as the Cuvier and Argo abyssal plains, which reach depths of more than five km. A unique feature of the region is the significant narrowing of the continental shelf around North-west Cape (approximately 7 km wide) from the broad continental shelf in the north of the region (approximately 400 km wide at Joseph Bonaparte Gulf) (DEWHA, 2007a), **Figure 2-8.**

The geological history of the region, as well as its geomorphology and oceanography, has influenced the composition and distribution of sediments (DEWHA, 2007a). The sedimentology of the NWMR is dominated by marine carbonates, which show a broad zoning and fining with water depth. Main trends of the NWMR sediments include a tropical carbonate shelf that is dominated by sand and gravel, an outer shelf/slope zone that is dominated by mud and a relatively homogenous rise and abyssal plain/deep ocean floor that is dominated by non-carbonate mud (Baker et al., 2008), **Figure 2-9**.

The distribution and resuspension of sediments on the inner shelf is strongly influenced by the strength of tides across the continental shelf as well as episodic events such as cyclones. Further offshore, on the mid to outer shelf and on the slope itself, sediment movement is primarily influenced by ocean currents and internal tides (DEWHA, 2007a).

This variation in bathymetry and interactions with oceanographic processes provides a diversity of habitats to marine fauna and flora within the NWMR.

2.5 Air quality

The ambient air quality of all three marine regions is largely unpolluted due to the extent of the open ocean area, the activities currently carried out in each and the relative remoteness of each region.

Vessel traffic and existing offshore surface infrastructure are the only likely sources of pollutants in the marine region. Closer to the coast there may be localised and temporary reductions in air quality around areas of high vessel traffic, or due to the occurrence of dust storms and bushfires. International contributors to reduced air quality in the marine region may include ‘slash-and-burn’ agricultural methods and large forest fires in South-east Asian regions (Vadrevu et al. 2014; Kim Oanh et al. 2018).

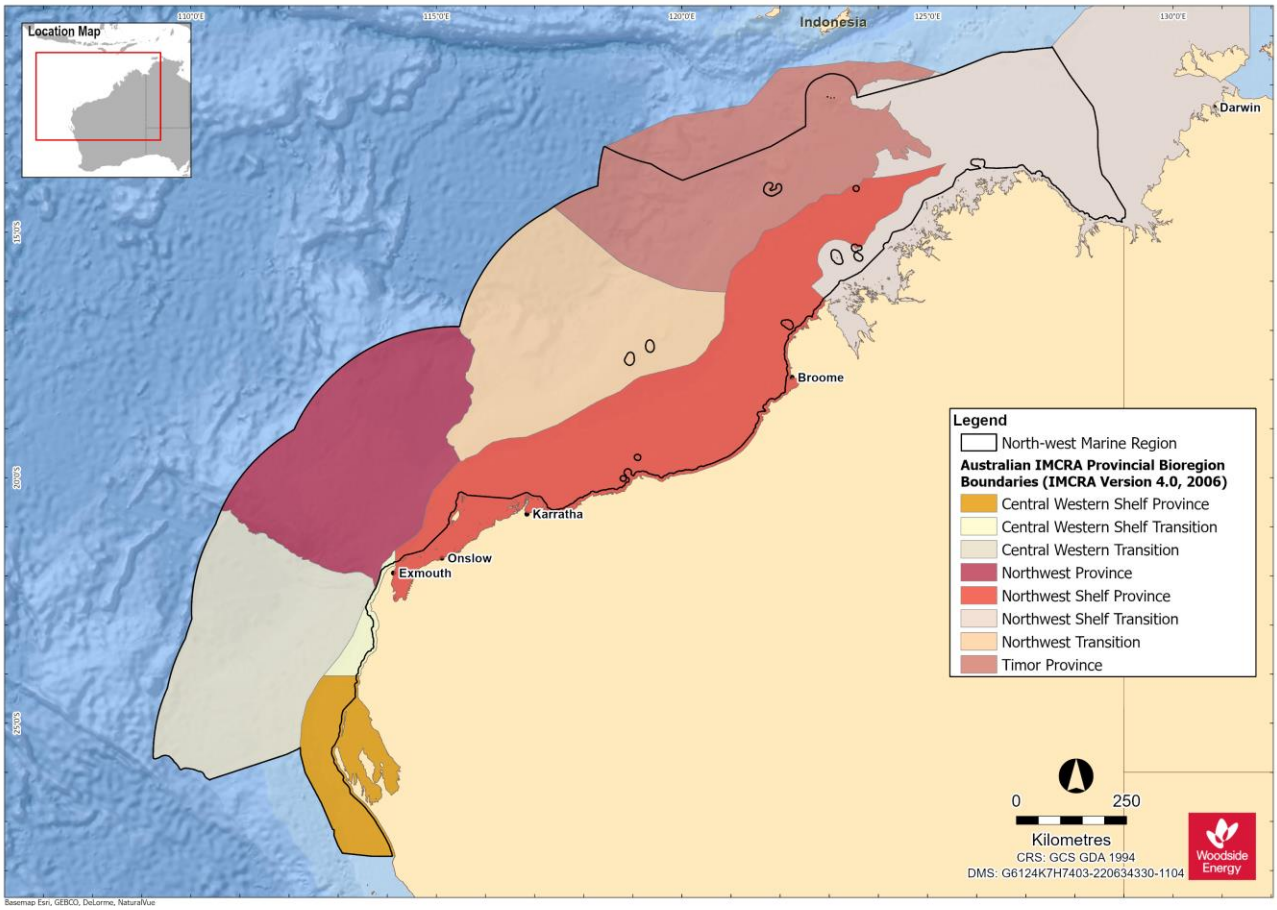


Figure 2-7. The eight Integrated Marine and Coastal Regionalisation of Australia (IMCRA) v4.0 provincial bioregions of the NWMR (GA, 2024)

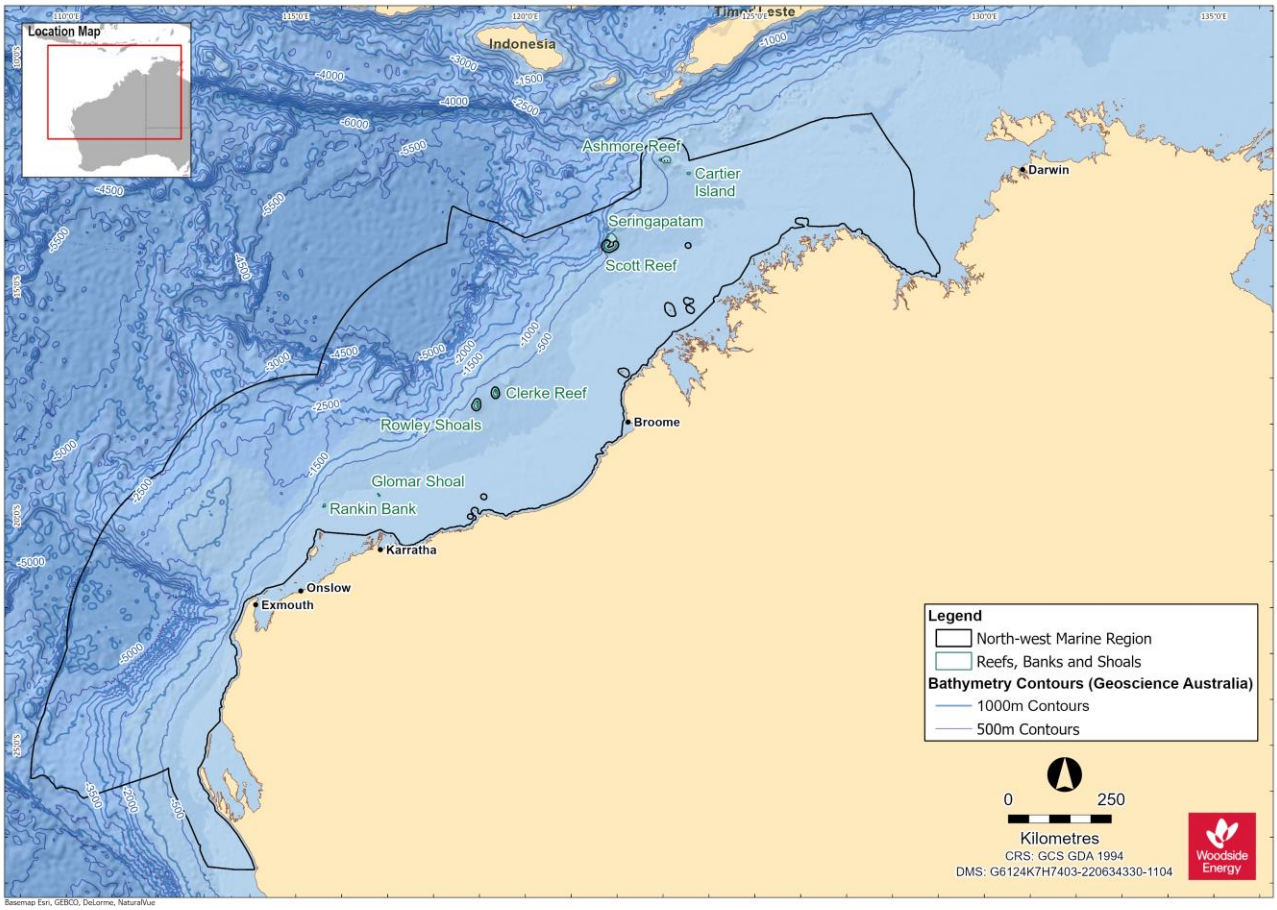


Figure 2-8. Bathymetry of the NWMR (data source: Geoscience Australia)

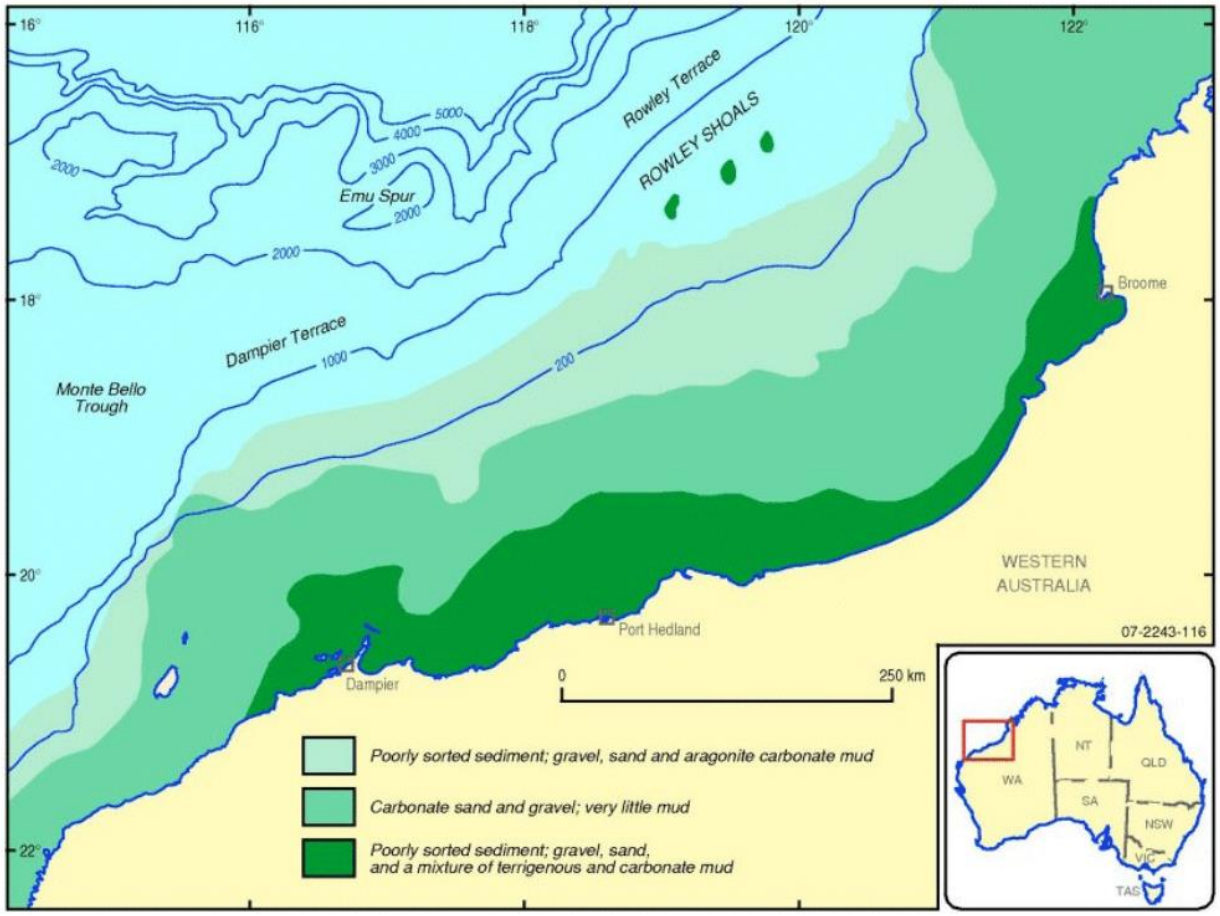


Figure 2-9. Overview of the seabed sediments of the NWMR (data source: Baker et al**., 2008)**

3. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (EPBC ACT)

3.1 Summary of Matters of National Environmental Significance (MNES)

This section summarises the matters of national environmental significance (MNES) reported for the three bioregions; NWMR **(Table 3-1),** SWMR (**Table 3-2**) and NMR (**Table 3-3**), based on the Protected Matters search reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Additional information on these MNES is provided in subsequent sections (referenced in **Table 3-1**, **Table 3-2** and **Table 3-3**).

Table 3-1 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the NWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	2	Shark Bay The Ningaloo Coast	**Section 11**
National Heritage Places	5	Shark Bay The Ningaloo Coast The West Kimberley The Dampier Archipelago (including Burrup Peninsula) Dirk Hartog Landing Site 1616	**Section 11**
Wetlands of International Importance (Ramsar)	4	Ashmore Reef National Nature Reserve Eighty Mile Beach Ord River Floodplain Roebuck Bay	**Section 11**
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	1	Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Terrestrial community and not considered further
Listed Threatened Species	109	Refer NWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	**Section 5 – Section 9**
Listed Migratory Species	97	Refer NWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	**Section 5 – Section 9**

Table 3-2 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the SWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	1	Australian Convict Sites (Fremantle Prison).	**Section 11**
National Heritage Places	5	Cheetup Rock Shelter Batavia Shipwreck site HMAS Sydney II and HSK Kormoran Fitzgerald River National Park Fremantle Prison (former).	**Section 11**

MNES	Number	Description	Section of this Document
Wetlands of International Importance (Ramsar)	6	Becher Point Wetlands Forrestdale and Thomsons Lakes Peel-Yalgorup System Vasse-Wonnerup System Lake Gore Lake Warden System	**Section 11**
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	9	SWMR Subtropical and Temperate Coastal Saltmarsh Terrestrial Banksia Woodlands of the Swan Coastal Plain ecological community Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond) Sedgelands in Holocene dune swales of the southern Swan Coastal Plain Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion Empodisma peatlands of southwestern Australia	**Section 11**
Listed Threatened Species	166	Refer SWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A
Listed Migratory Species	89	Refer SWMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A

Table 3-3 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the NMR

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	0	N/A	N/A
Wetlands of International Importance (Ramsar)	0	N/A	N/A
Commonwealth Marine Areas	5	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 0** **Section 11**
Listed Threatened Ecological Communities	0	N/A	N/A
Listed Threatened Species	82	Refer NMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A
Listed Migratory Species	82	Refer NMR PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR)	N/A

3.2 Part 13 Statutory Instruments for EPBC Act Listed Threatened and Migratory Species in the NWMR, SWMR and NMR

A screening process was conducted to identify which EPBC Act listed threatened and migratory species, and associated Part 13 statutory instruments, are relevant in the context of the assessment of impacts and risks associated with petroleum activities in each of the Woodside activity areas. The screening criteria included:

- overlap amongst the Woodside activity areas with habitat critical for survival (marine turtles etc) and with biologically important areas (BIAs) (overlapping the marine environment) for any listed threatened and/or migratory species as reported in the PMST searches;
- published literature, unpublished reports and/or credible anecdotal information (e.g. feedback from stakeholders) indicating species presence/occurrence within the Woodside activity areas;
- temporal overlap between the likely timing of petroleum activities and peak periods for key critical life stage behaviours (e.g. breeding, nesting, calving, resting, foraging, migration); and
- environmental aspects associated with petroleum activities that have been identified as a key threat to a species in a Part 13 statutory instrument (e.g. anthropogenic noise, light emissions, marine debris).

Relevant EPBC Act threatened and migratory species and their Part 13 statutory instruments are listed in **Table 3-4**. For the full list of EPBC Act listed species for each marine bioregion refer to the PMST reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Table 3-4 Summary of EPBC Act threatened and migratory species to be considered for impact or risk evaluation for Woodside operations

Species	EPBC Act Part 13 Statutory Instrument
All vertebrate marine fauna	Threat Abatement Plan for the impacts of marine debris on vertebrate marine life (Commonwealth of Australia, 2018)
Marine Mammals	
Blue whale	Conservation Management Plan for the Blue Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015–2025 (Commonwealth of Australia, 2015a)
Southern right whale	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW, 2024a)
Sei whale	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Fin whale	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
Australian sea lion	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPAC, 2013a) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)
Marine Reptiles	
All marine turtle species (loggerhead, green, leatherback, hawksbill, flatback, olive ridley)	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW, 2023d)
Mitchell's water monitor	Conservation Advice for *Varanus mitchelli* (Mitchell's water monitor) (DCCEEW, 2023c)
Short-nosed sea snake	Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Leaf-scaled sea snake	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Fishes, Sharks, Rays and Sawfishes	
Grey nurse shark (West coast population)	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (DOE, 2014)
White shark	Recovery Plan for the White Shark (*Carcharodon carcharias*) 2013 (DSEWPAC, 2013b)
Whale shark	Conservation Advice *Rhincodon typus* whale shark (Threatened Species Scientific Committee, 2015d)
All sawfishes (largetooth, green, dwarf, speartooth, narrow)	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Seabirds	
Migratory seabird species	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2020) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW, 2023d)

Species	EPBC Act Part 13 Statutory Instrument
Australian fairy tern	National Recovery Plan for the Australian Fairy Tern *Sternula nereis nereis (Commonwealth of Australia, 2020)* EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Australian lesser noddy	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 hectares (DEWHA, 2009)
Amsterdam Petrel	National Recovery Plan for albatrosses and petrels (DCCEEW, 2022) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Brown booby	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Wedge-tailed shearwater	
Flesh-footed shearwater	
Wilson's storm petrel	
Shorebirds	
Migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c) EPBC Act Policy Statement 3.21—Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW, 2023d)
Eastern curlew, far eastern curlew	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEEW, 2023f)
Curlew sandpiper	Conservation Advice *Calidris ferruginea* curlew sandpiper (DCCEEW, 2023g)
Bar-tailed godwit (*menzbieri*)	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (DCCEEW, 2024e)
Lesser sand plover	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threated Species Scientific Committee, 2016)
Australian painted snipe	Conservation Advice *Rostratula australis* Australian painted snipe (Threatened Species Scientific Committee 2013a)
Great knot	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW, 2024g)
Red knot, knot	Conservation Advice *Calidris canutus* Red knot (DCCEEW, 2024f)
Greater sand plover	Conservation Advice *Charadrius leschenaultii* Greater sand plover (DCCEEW, 2023h)
Black-tailed godwit	Conservation Advice for *Limosa limosa* black-tailed godwit (DCCEEW, 2024h)
Common greenshank	Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW, 2024i)
Asian dowitcher	Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW, 2024j)
Ruddy turnstone	Conservation Advice for *Arenaria interpres* (ruddy turnstone) (DCCEEW, 2024k)
Sharp-tailed sandpiper	Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW, 2024l)

Species	EPBC Act Part 13 Statutory Instrument
Terek sandpiper	Conservation Advice for Xenus cinereus (terek sandpiper) (DCCEEW, 2024m)
Grey plover	Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW, 2024n)

4. HABITAT AND BIOLOGICAL COMMUNITIES

4.1 Regional context

The NWMR habitats range from nearshore benthic primary producer habitats such as seagrass beds, coral communities and mangrove forests, to offshore soft sediment seabed habitats and submerged and emergent reef systems. These habitats support biological communities that range from low density sessile and mobile benthos, such as sponges, molluscs and echinoids (with noted areas of sponge hotspot diversity) in offshore soft sediment habitat (DSEWPAC, 2012a) to complex, diverse, remote coral reef systems.

Benthic primary producer habitats, such as seagrass beds, coral communities and mangrove forests within the SWMR, are described as a mixture of tropical and temperate species, due to the seasonal influences of the tropical waters carried south by the Leeuwin Current and the temperate waters carried north by the Capes Current (DSEWPAC, 2012b).

The NMR shares similar habitat types to the NWMR. The predominant habitat of the region includes soft muddy sediments on relatively flat terrain. Other habitat types include seagrasses, reefs, shoals and coastal habitats such as mangroves and coastal wetlands (Rochester et al., 2007).

The summary of key habitats and biological communities provided in the following sub-sections is focused on the primary features of relevance to the activity areas within the NWMR – primarily the offshore habitats of the continental shelf and slope, submerged shoals and banks, and remote oceanic reef systems of recognised conservation value.

4.2 Biological Productivity of NWMR

Primary productivity of the NWMR is generally low and appears to be largely driven by offshore influences (Brewer et al., 2007), with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. Seasonal weather patterns also influence the delivery of nutrients from deep-water to shallow water. Cyclones and North-westerly winds during the North-west monsoon (approximately November–March) and the strong offshore winds of the South-east monsoon (approximately April–September) facilitate the upwelling and mixing of nutrients from deep-water to shallow water environments (Brewer et al., 2007).

The Indonesian Throughflow (ITF) has an important effect on productivity in the northern areas of the Region. Generally, its deep, warm and low nutrient waters suppress upwelling of deeper comparatively nutrient-rich waters, thereby forcing the highest rates of primary productivity to occur at depths associated with the thermocline. When the ITF is weaker, the thermocline lifts bringing deeper, more nutrient-rich waters into the photic zone and hence resulting in conditions favourable to increased productivity (DEWHA, 2007a). Similarly, the Leeuwin Current has a significant role in determining primary productivity in the southern areas of the NWMR. As with the ITF, the overlying warm oligotrophic waters of the Leeuwin Current suppress upwelling. A subsurface chlorophyll maximum is therefore formed at a depth in the water column where nutrients and light are sufficient for photosynthesis to proceed. Seasonal changes in the strength of the Leeuwin Current influence primary productivity levels, and seasonal interactions between the Leeuwin and Ningaloo currents in the south of the NWMR, are believed to be particularly important (DEWHA, 2007a).

Internal tides (defined as internal waves generated by the barotropic tide) are a striking characteristic of many parts of the NWMR and are associated with highly stratified water columns. Internal waves (solitons), which can raise cooler, generally more nutrient rich water higher in the water column, are generated between water depths of 400 m and 1000 m where bottom topography results in a significant change in water depth over a relatively short distance. Cyclones are episodic events in the NWMR that contribute to spikes in productivity through enrichment of surface water layers due to enhanced vertical mixing of the water column. Temporary increases in primary productivity as a result of cyclones generally last between one and two weeks, and it is believed that the impacts of

cyclones are generally limited to waters less than 100 m deep and affect benthic communities more substantially than pelagic systems (DEWHA, 2007a).

Water depth also has a significant overriding influence over productivity in the marine environment, due to its influence on light availability. This is reflected by distinct onshore and offshore assemblages of major pelagic groups of phytoplankton, microzooplankton, mesoplankton and ichthyoplankton. Productivity booms are thought to be triggered by seasonal changes to physical drivers or episodic events, as detailed above, which result in rapid increases in primary production over short periods, followed by extended periods of lower primary production. The trophic systems in the NWMR are able to take advantage of blooms in primary production, enabling nutrients generated to be used by different groups of consumers over long periods (DEWHA, 2007a).

Little detailed information is available about the trophic systems in the NWMR. The utilisation of available nutrients is thought to differ between pelagic and benthic environments, influenced by water depth and vertical migration of some species groups in the water column. In the pelagic system, it is thought that approximately half of the nutrients available are utilised by microzooplankton (e.g. protozoa) with the remainder going to macro/meso-zooplankton (e.g. copepods). As primary and secondary consumers, gelatinous zooplankton (e.g. salps, coelenterates) and jellyfish are thought to play an important role in the food web, contributing a significant proportion of biomass in the marine system during and for periods after booms in primary productivity. Salps are semi-transparent, barrel-shaped marine animals that can reproduce quickly in response to bursts in primary productivity and provide a food source for many pelagic fish species (DEWHA, 2007a).

4.3 Planktonic Communities in the NWMR

The NWMR has two distinct phytoplankton assemblages; a tropical oceanic community in offshore waters and a tropical shelf community confined to the NWS (Hallegraeff, 1995). MODIS (Moderate Resolution Imaging Spectrometer) satellite datasets from the NWMR indicates that chlorophyll (and thus phytoplankton) levels are low in summer months (December to March) and higher in the winter months (Schroeder et al., 2009). Low chlorophyll levels during summer months may be a result of lower plankton productivity during the wet season or lower nutrient inputs from warm surface waters dominant during summer. However, it is likely that much of the primary production is taking place below the surface, where the MODIS imagery does not penetrate (Schroeder et al., 2009). The winter months are relatively cloud-free and surface chlorophyll is high throughout most of the region.

Zooplankton may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008) and fish larvae abundance (CALM, 2005a) can occur throughout the year. Spatial and temporal patterns in the distribution and abundance of macro-zooplankton on the North-west Shelf are influenced by sporadic climatic and oceanographic events, with large inter-annual changes in assemblages (Wilson et al., 2003). Amphipods, euphausiids, copepods, mysids and cumaceans are among the most common components of the zooplankton in the region (Wilson et al., 2003).

4.3.1 Browse

Phytoplankton within the Browse activity area is expected to reflect the conditions of the NWMR. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (e.g. bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson et al., 2007).

Zooplankton within the activity area may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008; Simpson et al., 1993) and fish larvae abundance (CALM, 2005a) can occur throughout the year.

The influence of the Indonesian Throughflow restricts upwelling across the Kimberley System (approximately equates to the Browse activity area). However, small-scale topographically associated current movements and upwellings are thought to occur, which inject nutrients into specific locations within the system and result in 'productivity hot-spots'. Similarly, internal waves, generated at the shelf break (e.g. west of Browse Island and around submerged cliffs located at the continental shelf edge) play a role in making nutrients available in the photic zone (Sutton et al, 2019). Productivity within shallow nearshore waters is driven primarily by tidal movement and terrestrial runoff whereby nutrients are mixed by tidal action and new inputs of organic matter come from the land.

4.3.2 North-west Shelf / Scarborough

Plankton communities within the NWS / Scarborough activity area are expected to reflect conditions of the NWMR. Internal tides along the NWS and Exmouth Plateau result in the drawing of deeper cooler waters into the photic zone, stirring up nutrients and triggering primary productivity. Broadly the greatest productivity within this sub-system is found around the 200 m isobath associated with the shelf break.

4.3.3 North-west Cape

Waters of the North-west Cape experience a relatively high diversity of phytoplankton groups including diatoms, coccolithophorids and dinoflagellates. During the warmer months blooms of *Trichodesmium* occur in the region, these have been observed particularly on the frontal systems around Point Murat (Heyward et al., 2000).

Average Leeuwin Current phytoplankton biomass is characteristic of low productivity oceanic waters like the Indian, Pacific and Atlantic Oceans (Hanson et al., 2005). However, the Canyons linking the Cuvier Abyssal Plain and Cape Range Peninsula Key Ecological Feature(KEF) are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. The canyons are thought to interact with the Leeuwin Current to produce eddies inside the heads of the canyons, resulting in waters from the Antarctic intermediate water mass being drawn into shallower depths and onto the shelf (Brewer et al. 2007). These waters are cooler and richer in nutrients and strong internal tides may also aid upwelling at the canyon heads (Brewer et al. 2007). The narrow shelf width (about 10 km) near the canyons facilitates nutrient upwelling and relatively high productivity. This high primary productivity leads to high densities of primary consumers, such as micro and macro-zooplankton, such as amphipods, copepods, mysids, cumaceans, euphausiids (Brewer et al., 2007).

4.4 Habitats and Biological Communities in the NWMR

4.4.1 Offshore Habitats and Biological communities

The NWMR has a large area of continental shelf and continental slope, with a range of bathymetric features such as canyons, plateaus, terraces, ridges, reefs, banks and shoals. The marine environment in this region is typified by tropical to sub-tropical marine ecosystems with diverse habitats from soft sediments, canyons, remote oceanic coral reef systems and continental shelf limestone pavement seabed habitat. The NWMR encompasses large seabed areas of deepwater seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and spare benthic biota. Comprehensive surveys and documentation of habitats and biota from the shelf to deep waters (100 m to 1000 m) spanning 13 sites between Barrow Island and Ashmore Reef, running downslope across the continental shelf and slope of NWS were conducted in 2007 (Williams et al., 2010). Sites on the continental slope (approximately 400 m deep) predominately comprised soft, muddy sediments and epifauna were sparsely distributed and limited to isolated individual sessile biota such as crinoids, anemones, glass sponges and sea pens. Occasional non-sessile biota, characteristic of the deeper water benthic communities was recorded and included: echinoderms (urchins, holothurians and sea stars) and decapod crustaceans (prawns and crabs). Similar benthic biota composition was reported for the continental slope seabed habitats at depths of 700-1000 m (Williams et al., 2010) With reference to the North-west Shelf (NWS), multiple surveys have documented habitats comprising bare unconsolidated carbonate sediments supporting a sparse assemblage of deposit and filter feeding organisms, including glass sponges, urchins, sea cucumbers, sea stars and crustaceans (URS 2010). Filter feeding communities documented within the NWS include bryozoans, sponges, gorgonians, and hydroids attached to consolidated substrate; these were interspersed with sand which hosted fewer filter feeders (AIMS 2014). Infauna associated with soft, unconsolidated sediment habitat such as polychaetes are widespread and well represented along the continental shelf and upper slopes (Brewer et al. 2007, RPS 2012). The key habitats and biological communities that are representative of the broader NWMR are summarised in **Table 4-1**.

The key habitats and biological communities representative of the broader SWMR and NMR are summarised in **Table 4-2** and **Table 4-3**.

There is a marked biodiversity gradient from high ecological valued coastal (primary producer habitats and associated benthic and mobile biota) to the lower valued deeper offshore habitats comprising soft, unconsolidated sediments and typically sparser biota (epifauna and infauna), with the exception of the submerged shoal features, remote oceanic reef systems of the Rowley Shoals, Scott Reef and Ashmore Reef as well as the fringing reef habitats of Ningaloo, the Kimberley coastline, the offshore island groups such as Barrow Island, Lowendal and Montebellos and the Dampier Archipelago. A brief overview of the high valued biodiversity reef and mesophotic habitats and associated benthic communities are presented in the following sub-sections.

4.4.2 Browse

The most diverse habitats and benthic communities in the Kimberley region of North-western Australia, are where the oceanic reef systems of Ashmore, Cartier, Scott and Seringapatam reefs, and the Rowley Shoals, sit near the edge of the continental shelf hundreds of kilometres from the mainland and from each other (Gilmour et al., 2019 and 2023), refer to **Figure 4-1.** The long-term monitoring program for Scott Reef and the Rowley Shoals conducted by AIMS since 1994 is now one of the world's longest studies of coral reef ecosystems and provides unprecedented understanding of the background (baseline) changes at oceanic reefs on Australia's North-west Shelf, encompassing the physical drivers, and underlying processes of change (impact and recovery) from acute disturbances (heat stress – coral mass-bleaching and cyclones).

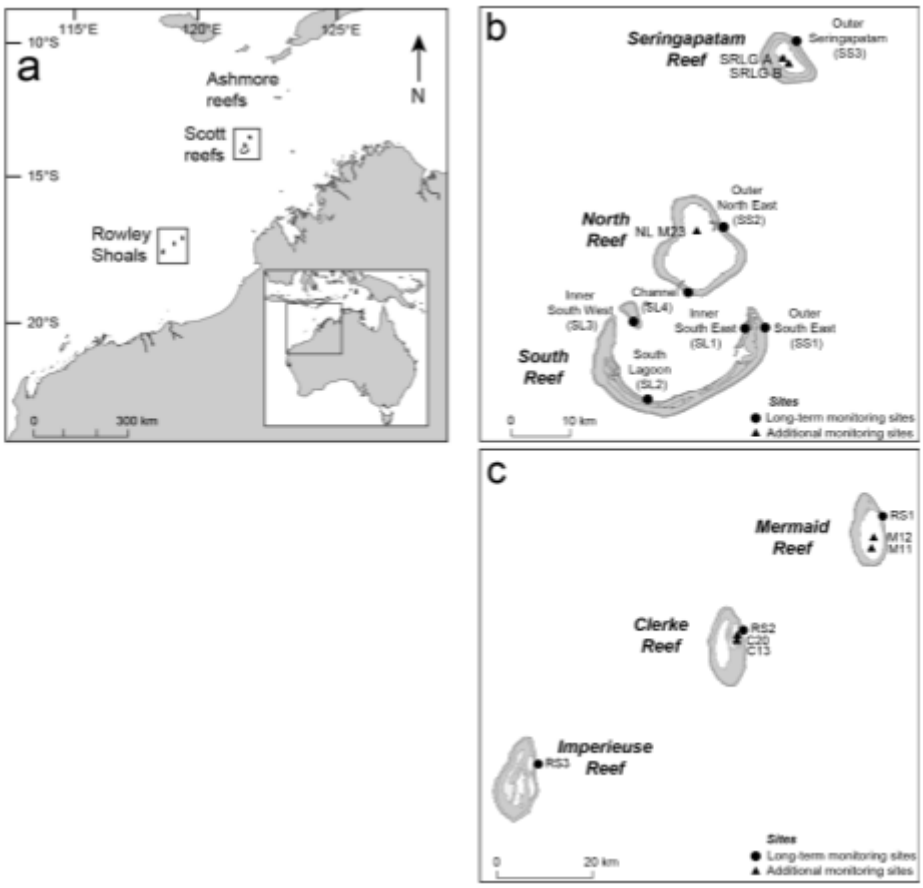


Figure 4-1. The position of Scott Reef, Ashmore and the Rowley Shoals off North-western Australia and location of permanent long-term monitoring sites (source: Gilmour et al., 2023)

Scott Reef is an annular reef approximately 17 km long and 16 km wide comprising two coral reef atolls rising steeply from depths of approximately 400-500 m. These atolls, referred to as South Scott Reef and North Scott Reef, are separated by a deep channel (**Figure 4-1**). North Scott Reef features an emergent reef flat, outer slope habitats and a shallow lagoon approximately 20 m deep with two small channels linking it to the surrounding ocean. The shallow closed waters of North Scott Reef lagoon contain a range of habitats from bare sand, sand with coral outcrops, and to shallow to deep lagoonal coral dominated habitats (Gilmour et al., 2013). This in contrast to the deeper, more open lagoon of South Scott Reef described as an extensive, unique mesophotic (30-70 m depth) coral dominated habitat comprising hard corals, calcareous algae, soft corals, sponges, bryzoans and other invertebrates (Gilmour et al. 2013; Heyward and Radford, 2019). It is largely protected from the direct influence of major storms by the surrounding horseshoe-shaped emergent reef rim (Heyward and Radford, 2019). South Scott Reef shallow water habitats also include reef flats (of low coral cover) and extensive outer reef slopes with the highest hard coral diversity of any habitat at Scott Reef (Gilmour et al., 2013).

Over the past 30 years the coral communities at Scott Reef have been extensively studied and the Scott Reef long-term monitoring program showed that from 1994-2021 the mean cover of hard and soft corals on the reef slopes was 36%, and ranged between 13% to 59%. Decreases in coral cover were caused by damaging waves, generated by storms and cyclones, and recurrent heat stress causing coral bleaching. The most severe heat stress and mass coral bleaching occurred in 1998 and 2016. Recovery from the first mass-bleaching event in 1998 took over a decade. By 2010, coral cover had reached pre-bleaching levels (45%). Despite moderate coral bleaching and cyclone disturbances, cover had increased by 49% in January 2016, after which the reefs were impacted by a second mass bleaching event that reduced mean coral cover to 15%. Five years after the 2016 mass bleaching event, total cover of hard and soft corals had reached 34%, showing a similar rate

of recovery to that following the 1998 mass bleaching (Gilmour et al. 2023). The Rowley Shoals comprise three distinct reef continental shelf atolls of similar dimension, shape and orientation, named Mermaid Reef, Clerke Reef and Imperieuse Reef. The reefs are orientated North-south and are approximately 30-40 km apart. Each atoll covers an area approximately 80-90 km^2 and extends almost vertically from seafloor depths of approximately 400 m. Each atoll comprises extensive lagoon habitat composed of bare sand, coral dominated patches and coral outcrops, emergent reef crests and outer reef slopes. At high tide only the sandy cays of Clerke Reef and Imperieuse Reef remain visible.

Across the Rowley Shoals, the reef crest and reef slope were most similar and the lagoon most unique in terms of habitat and benthic communities. Hard corals and coralline algae were the most abundant biota (>40%) and other benthic organisms such as sponges, ascidians and macroalgae are rare (<5%). Soft corals were also rare (<1%) at all reefs and habitats, apart from the reef slope (4%) at Mermaid Reef. Across all surveys (1995-2019), the mean cover of hard and soft corals at the reef slope was 46% and ranged between 26% and 58%. Decreases in coral cover were primarily due to frequent storms and cyclones. Between 2005 and 2008, three cyclones and moderate heat stress caused a mean reduction in coral cover (52% to 42%) at the reef slope habitat across the Rowley Shoals. Coral bleaching was low (<10%) in January 2016 except for minor to moderate (11-30%) bleaching at two lagoon sites at Mermaid Reef. A prolonged heat stress period (45 days) in May 2020 caused the worst coral bleaching on record (approximately 20%) across reef habitats with the highest heat stress and declines in coral cover at the reef slope for Imperieuse Reef (9%) and minor bleaching and small decreases in coral cover at the reef slope (5%) and lagoon (3%) at Clerke Reef (Gilmour et al. 2023).

The reefs of Seringapatam, Scott Reef, Ashmore Reef and Cartier Island are recognised as key ecological features (KEFs) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves are listed and described in **Section 11** and includes: Commonwealth Marine Parks of Ashmore Reef, Cartier Island, Kimberley and Mermaid Reef, and State Marine Parks of the North Kimberley, the Rowley Shoals and Lalang-garram-horizontal falls and North Lalang-garram.

4.4.3 North-west Shelf / Scarborough

The NWS contains numerous submerged shoal features and as relatively recent surveys have revealed several of these features are of high biodiversity value comprising hard coral and macro-algae communities on upper reaches of the shoals and mesophotic filter-feeding benthic communities in deeper waters on and in proximity to the shoal features, namely, Rankin Bank and Glomar Shoal.

Rankin Bank

Rankin Bank comprises three main sedimentary banks rising steeply from between 80 and 120 m below sea level, reaching 20 – 40 m below the sea surface and featuring plateaus and troughs (Abdul Wahab et al., 2018). Rankin Bank is one of only two large, complex bathymetrical features on the outer western shelf of the West Pilbara (the other being Glomar Shoal, about 125 km West-south west) (Abdul Waheb et al., 2018), **Figure 4-1**.

Surveys of Rankin Bank were undertaken by the Australian Institute of Marine Science (AIMS) in 2013 and in 2017 to better understand the habitats and complexity of the submerged shoal ecosystems, and associated fish assemblages (AIMS, 2014; Abdul Waheb et al., 2018 and 2017 - Jones et al. 2021). The surveys were undertaken using various methods, including multibeam survey, towed video, Stereo Baited Underwater Video Survey (SBRUVS) and beam transmissions (to measure turbidity), at depths between 20 and 115 m (Abdul Waheb et al., 2018). Water column data were also collected in January 2017 to examine potential temporal variation in these parameters (Abdul Waheb et al., 2018).

Seabed sediments at Rankin Bank were primarily carbonate with a grain size of mostly sand, with finer muds found at the deeper sample sites (AIMS, 2014). Sand was also found to increase with depth and unconsolidated reef exceeded 30% at all depths (Abdul Waheb et al., 2018). Hydrocarbon and trace metal concentrations in sediments indicated the bank was unaffected by anthropogenic pollution (AIMS, 2014). Turbidity was lower at Rankin Bank than Glomar Shoal during the survey, with beam transmissions remaining above 95% at all depths (Abdul Waheb et al., 2018). Turbidity was slightly lower in 2017, whereas temperature and salinity were slightly higher at all depths (Abdul Waheb et al., 2018).

Proportion of cover by benthic taxa was highest for macroalgae and hard corals, particularly at depths less than 40 m, and decreased with increasing depth. Other benthic taxa included soft corals and sponges which were present in lower proportions at all depths. Encrusting corals were common, reaching cover of about 12.5% at depths less than 40 m. Solitary corals were also present (about 10% cover) primarily at depths between 40 and 60 m. Foliose and submassive/columnar corals were also present (Abdul Waheb et al., 2018).

Fish abundance and diversity at Rankin Bank were found to be comparable with other reefs in North-west Australia, and notably twice as abundant and 1.5 times more diverse than those fishes identified in a comparable survey at Glomar Shoal (Abdul Waheb et al., 2018). A total of 205 fish species were recorded at Rankin Bank, 100 of which were common to both Glomar Shoal and Rankin Bank. Depth, location, sand, sponges and hard coral were all found to contribute to the fish communities present. Specifically, fish communities were primarily associated with hard coral and shallow depths at Rankin Bank (Abdul Waheb et al., 2018).

Glomar Shoal

Glomar Shoal is a large (215 km^2) and complex bathymetrical feature situated on the outer continental shelf off the Pilbara. Glomar Shoal is about 8.5 times wider than Rankin Bank at the 60 m contour. Glomar Shoal rises from 80 m depth on its South-west side and 70 m depth on its North-eastern side to form a single plateau at 40 m depth (Abdul Waheb et al., 2018). Together with Rankin Bank, these remote shallow water areas represent regionally unique habitats and are considered

likely to play an important role in the productivity of the Pilbara region (AIMS 2014, Abdul Wahab et al. 2018), **Figure 4-1**.

Baseline biodiversity and habitat mapping surveys of the benthic habitats and communities at Glomar Shoal and Rankin Bank were undertaken in 2013 and 2017 by AIMS (2014) as detailed in Abdul Waheb et al*.,* (2018) and Jones et al. (2021), respectively. Salinity and temperature were found to be slightly higher in 2017 compared with the 2013 values (Abdul Wahab et al., 2018), most likely due to seasonality. Substrates at Glomar Shoal were found to vary with depth, from coarse unconsolidated sediment at depths greater than 60 m and hard substrate (i.e. consolidate reef) supporting benthic communities comprising hard and soft corals, sponges and macroalgae at depths < 40 m (Abdul Wahab et al., 2018). Total cover of benthic taxa (hard coral, soft coral, sponges and other benthic biota) was highest at depths < 40 m and decreased with depth (Abdul Wahab et al., 2018). At depths of 60-80 m benthic cover was low (about 2%) and at depths greater than 80 m benthic cover was barely present (Abdul Wahab et al., 2018).

A total of 170 fish species were identified at Glomar Shoal and fish abundance and diversity of the demersal fish communities of Glomar Shoal were found to vary with seabed habitat type; sand, hard coral and sponge coverage influenced fish communities, with higher abundance and diversity of fish associated with shallow hard coral habitats. (Abdul Wahab et al., 2018). In general, the fish abundance and diversity of Glomar Shoal are considered comparable with other reefs and the submerged shoals and banks in the region, although less diverse and abundant than fish assemblages at Rankin Bank (Abdul Wahab et al., 2018).

Glomar Shoal is recognised as a Key Ecological Feature (KEF) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) are described in **Section 11** and includes: Commonwealth Marine Parks of Montebello and State Marine Parks Montebello Islands and Barrow Island and the Barrow Island marine management area.

4.4.4 North-west Cape

Ningaloo Reef and Shark Bay are among Australia's iconic marine areas, and the significance of these ecosystems is recognised through their inclusion in State and Commonwealth Marine Parks and the World Heritage Register. Ningaloo Reef is the only example in the world of an extensive fringing reef on the West coast of a continent and is host to over 200 coral species and more than 500 reef fish species. Shark Bay is the most westerly point of Australia and represents a transition zone between temperate and tropical marine fauna, resulting in high species diversity (Miller et al., 2015), including fringing coral communities on the leeside of the barrier islands of Dirk Hartog, Bernier and Dorre. Ningaloo Reef is one of the longest (approximately 300 km) and most pristine fringing reefs in the world, with an unusually narrow continental shelf. Deep oceanic waters, the reef and coastline habitats and benthic communities are in close proximity resulting in a huge array of internationally significant marine life coexisting. More than 200 hard coral species, 500 fish, 650 mollusc, 600 crustacean, 1000 marine algae, 155 sponge and 25 echinoderm species have been recorded from the shelf, slope and deep-water habitats[2]. Refer to the CSIRO Ningaloo Outlook program for further information and publications relating to the shallow and deep-water reef systems, and megafauna species (marine turtles and whale sharks)[3].

The extensive reef system has been classified by topography and benthic cover using airborne hyperspectral surveys and much of the area was allocated as shallow, flat lagoons intersected by narrow, deeper channels that facilitate water circulation. Five distinct geomorphic/benthic classes of coral-algae mosaics in different topographic settings: coral and algal communities (reef flat and very shallow areas), coral and algal communities (backreef and shallow forereef), coral and algal

[2] https://www.dbca.wa.gov.au/management/world-heritage-areas/ningaloo-coast-world-heritage-area#:~:text=One%20of%20the%20longest%20and,life%20coexisting%20in%20one%20area.[accessed on 18/08/2024]

[3] https://research.csiro.au/ningaloo/outlook/research-outputs/publications/

communities (deep forereef and other deep areas), sand or limestone pavement (lagoonal slopes and flat lagoon areas) (Kobryn et al., 2022).

Ningaloo and the Muiron Islands fringing reef habitat supports benthic communities dominated by algae and consolidated reef in the shallow reef environment. Surveys conducted by AIMS in 2024 documented hard coral cover averaged approximately 13% across the Ningaloo Marine Park area (Miller et al., 2015). A notable pattern in the benthos recorded by Miller et al. (2015) was an increase in coral cover with latitude, with the highest coral cover recorded around Coral Bay and the reef areas in southern Ningaloo. Coral cover was the lowest at the East Ningaloo Province (northern Exmouth Gulf) (<6%). Relative to Scott Reef and the Rowley Shoals, the Ningaloo benthic communities are distinct in that they are characterised by high biotic cover overall, but dominated by algal cover and with less than half the cover of key biota including hard corals, soft corals and sponges as recorded on offshore reefs (Miller et al., 2015).

Ningaloo Reef is vulnerable to storm damage and marine heat stress events that have resulted in past localised coral damage and moderate coral bleaching. Coral bleaching occurred in 2022 due to warm ocean temperatures driven by the 2021–22 La Niña. The region's last severe marine heatwave was driven by the 2010–11 La Niña, which resulted in bleaching being recorded for the first time on Ningaloo[4]. Also of note is the recurrent deoxygenation events at Bills Bay (Coral Bay) following coral spawning events. In March 2022, the deoxygenation event was triggered by a combination of weather and oceanographic conditions that led to a prolonged trapping of coral spawn in Bills Bay and this in turn caused mass coral mortality and a large but localised fish kill. The 2022 deoxygenation event was the seventh such event recorded in documented history (Richards et al., 2024).

The Shark Bay region is renowned for its terrestrial and marine biodiversity including seagrass cover extending over 4,000 km^2 of the bay and the 1.030 km^2 Wooramel Seagrass Bank is the largest structure of its type in the world. Baseline surveys conducted in 2014 by AIMS specifically targeted the outer Shark Bay area and the habitats and benthic communities surrounding the barrier islands of Dirk Hartog, Bernier and Dorre. Sand was a dominant feature of the benthos (>60%), particularly in areas inside the bay and in deep water outside the bay. Benthic communities in relatively sheltered areas of outer Shark Bay were characterised by seagrass and turf algae, whereas in more exposed locations, benthos was dominated by macroalgal and turf algal communities. Corals and sponges made up <1% of the cover in outer Shark Bay, although due to inclement weather during surveys shallow areas where coral species are more likely to occur could not be surveyed. Observations of patchy but high coral cover in shallow parts of some towed video transects suggests coral cover across outer Shark Bay may have been underestimated. The highest coral cover was recorded in the channel between Dirk Hartog and Dorre Islands, indicating this area may be particularly favourable for coral growth (Miler et al., 2015).

Commonwealth waters adjacent to Ningaloo Reef is recognised as a Key Ecological Feature (KEF) within NWMR, refer to **Table 10-1**. Protected Area status (Australian Marine Parks and State Marine Parks and Reserves) are described in **Section 11** and includes: Commonwealth Marine Parks of Ningaloo and Shark Bay and State Marine Parks of the Ningaloo Reef and the Muiron Island marine management area and Shark Bay marine park and Hamelin Pool nature reserve.

4.4.5 Shoreline, coastal habitats and biological communities

The NWMR encompasses offshore and coastal waters, islands and mainland shoreline habitats typified by mangroves, tidal flats, saltmarshes, coral reefs (remote, offshore reef systems to extensive fringing reef systems like NingaloolikeNingaloo), sandy beaches, and smaller areas of rocky shores. Each of these shoreline types has the potential to support different flora and fauna assemblages due to the different physical factors (e.g. waves, tides, light, etc.) influencing the habitat.

[4] https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate

The key shoreline habitats representative of the broader NWMR are summarised in **Table 4-1**.

The key shoreline habitats representative of the broader SWMR and NMR are summarised in **Table** 4-2 and **Table 4-3**.

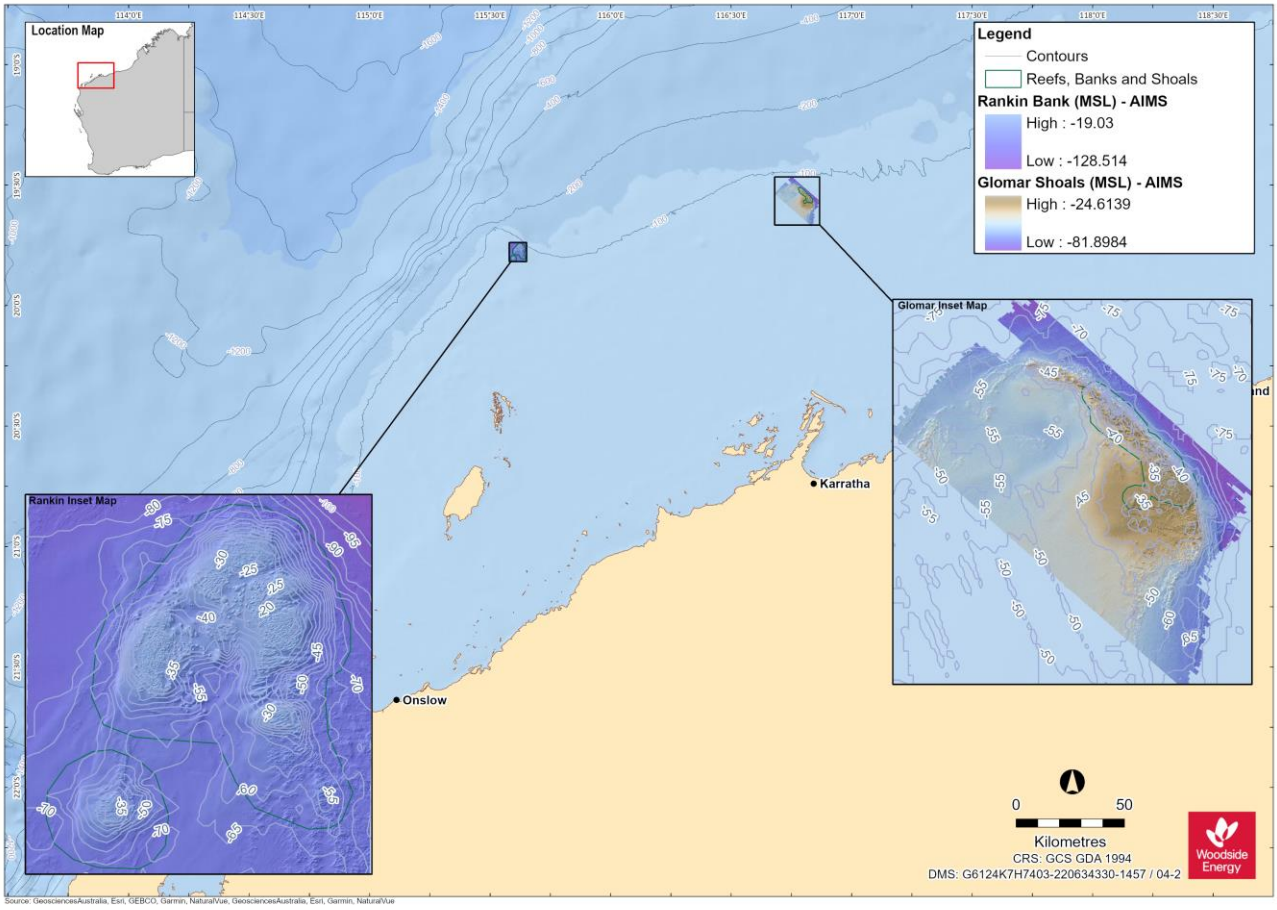


Figure 4-2. Habitat maps of Rankin Bank and Glomar Shoal (source: AIMS, 2014)

Table 4-1 Habitats and biological communities within the NWMR

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Offshore habitats and biological communities				
Soft sediment with infauna	The offshore environment of the NWMR comprises predominately of seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and sparse benthic biota. The benthic communities inhabiting the predominantly soft, fine sediments of the offshore habitats are characterised by infauna such as polychaetes, and sessile and mobile epifauna such as crustacea (shrimp, crabs and squat lobsters) and echinoderms (starfish, cucumbers). The density of benthic fauna is typically lower in deep-sea sediment habitats (greater than 200 m) than in shallower coastal sediment habitats, but the diversity of communities may be similar.			
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. This habitat is found in offshore areas of the NWMR, often associated with key ecological features such as the ancient coastline at 125 m depth contour KEF.			**Section 10**
	Ancient coastline at 125 m depth contour KEF Continental Slope Demersal Fish Communities KEF	Ancient coastline at 125 m depth contour KEF Continental Slope Demersal Fish Communities KEF	Ancient coastline at 125 m depth contour KEF Continental Slope Demersal Fish Communities KEF	**Section 10**
Coral Reef	Coral reef habitats within the NWMR have a high species diversity that includes corals, and associated reef species such as fishes, crustaceans, invertebrates, and algae. Coral reef habitats of the offshore environment of the NWMR include remote oceanic reef systems, large platform reefs, submerged banks and shoals.			
	Browse Island Scott Reef Seringapatam Reef Ashmore Reef Cartier Island Hibernia Reef	Rowley Shoals (including Mermaid Reef, Clerke Reef, Imperieuse Reef) Glomar Shoal Rankin Bank		**Section 4.4.1** **Section 10** **Section 11**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck et al., 2003; Wilson et al., 2010). In the northern half of Western Australia, these habitats are restricted to sheltered and shallow waters, including around offshore reef systems, due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones.			
	Scott Reef Seringapatam Reef Ashmore Reef	Rowley Shoals (including; Mermaid Reef, Clerke Reef, Imperieuse Reef)		**Section 11**
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2008). Filter feeders generally live in areas that have strong currents and hard substratum, often associated with deeper environments of the shoals and banks in the offshore NWMR.			
	Lower outer reef slopes of the oceanic reef	Glomar Shoal Rankin Bank	Cape Range canyon system	**Section 4.4.1** **Section 10**

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
	systems such as Scott Reef	Ancient coastline at 125 m depth contour KEF		**Section 11**
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR, being found around islands and reefs in the offshore areas of the region.			
	Browse Island Scott Reef (Sandy Islet) Ashmore Reef Cartier Island	Montebello Islands Lowendal Islands Barrow Island	Muiron Islands	**Section 11**
Nearshore/coastal habitats and biological communities				
Coral Reef	Coral reef habitats typically found in nearshore regions of the NWMR include the fringing reefs around coastal islands and the mainland shore.			
	Kimberley East Holothuria and Long Reefs Bonaparte and Buccaneer Archipelagos Montgomery Reef Adele complex (Beagle, Mavis, Albert, Churchill reefs, Adele Island)	Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 11**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck Jr. et al., 2003; Wilson et al., 2010). In the nearshore areas of the NWMR, these habitats are restricted to sheltered and shallow waters due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones. These areas include in bays and sounds and around reef and island groups.			
	King Sound	Roebuck Bay Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 11**
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2007a). Filter feeders generally live in areas that have strong currents and hard substratum. Conversely, higher diversity infauna is mainly associated with soft unconsolidated sediment and infauna communities are considered widespread and well represented along the continental shelf and upper slopes of the NWMR. In nearshore areas of the NWMR, these species are generally found around reef systems.			
		Deeper habitats of Rankin Bank and Glomar Shoal	Deeper habitats of Ningaloo Reef and the protected sponge zone in the South	

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al., 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie et al., 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the NWMR.			
	Dampier Peninsula (including Carnot Bay, Beagle Bay and Pender Bay)	Pilbara Coastline (including; Ashburton River Delta, Coolgra Point, Robe River Delta, Yardie Landing, Yammadery Island and the Mangrove Islands) Montebello, Lowendal and Barrow Island Groups Roebuck Bay	Shark Bay Mangrove Bay, Cape Range Peninsula Exmouth Gulf	**Section 11**
Saltmarshes	Saltmarsh communities are confined to shoreline habitats and are typically dominated by dense stands of halophytic plants such as herbs, grasses, and low shrubs. The diversity of saltmarsh plant species increases with increasing latitude (in contrast to mangroves). The vegetation in these environments is essential to the stability of the saltmarsh, as they trap and bind sediments. The sediments are generally sandy silts and clays and can often have high organic material content.			
		Eighty Mile Beach Roebuck Bay	Shark Bay	**Section 11**
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR. Sandy beaches are important for both resident and migratory seabirds and shorebirds and can also provide an important habitat for turtle nesting and breeding. They are located along many coastlines of the nearshore environments of the NWMR.			
	Cape Domett Lacrosse Island	Eighty Mile Beach Eco Beach Dampier Archipelago Inshore Pilbara Islands (Northern, Middle, and Southern)	Ningaloo Coast Muiron Islands Exmouth Gulf	**Section 11**

Table 4-2 Habitats within the SWMR

	Location
Offshore	
Soft sediment with infauna	Most of the SWMR seafloor is composed of soft unconsolidated sediments, but due to large variations in bathymetry there are marked differences in sedimentary composition and benthic assemblage structure across the region. Despite the prevalence of these habitats in the SWMR, very little is known about the composition or distribution of the region's sedimentary infauna (DEWHA, 2008b).
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments.
	Perth Canyon Marine Park Ancient coastline at 90-120 m depth contour KEF Diamantina Fracture Zone Naturaliste Plateau
Coral Reef	To date, studies and understanding of the corals within the SWMR have concentrated on the shallow water areas in State waters. Within the deeper Commonwealth waters of the SWMR little is known of the distribution of corals.
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally inhabit deeper habitat (below the photic zone) that have strong currents and hard substratum
	Ancient coastline at 90-120 m depth Diamantina Fracture Zone Naturaliste Plateau Perth Canyon Marine Park South-west Corner Marine Park
Nearshore	
Coral Reef	The northern extent of the SWMR coincides loosely with the disappearance of abundant and diverse coral from coastal habitats. To the south of Shark Bay, abundant corals occur predominantly around offshore islands, with corals at inshore sites occurring in very isolated patches of non-reef coral communities, usually of reduced species richness.
	Houtman Abrolhos Islands Rottnest Island
Seagrass and Macroalgae communities	Within the SWMR, macroalgae and seagrass communities are noted for their extent, species richness and endemism. The clear waters of the region allow light to reach greater depths, with some species found at much greater depths than usual (down to 120 m) (DEWR, 2007). Of the known species there are more than 1000 species of macro-algae and 22 species of seagrass consisting of tropical and temperate species. Seagrass and macro-algae occur in areas with sheltered bays and in the inter-reef lagoons along exposed sections of the coast.
	Houtman Abrolhos Islands Jurien Marine Park Shoalwater Islands Marine Park Geographe Marine Park Cockburn Sound Rottnest Island

	Location
	Commonwealth marine environment within and adjacent to the West-coast inshore lagoons KEF Commonwealth marine environment within and adjacent to Geographe Bay KEF Commonwealth marine environment surrounding the Recherche Archipelago KEF
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally live in areas that have strong currents and hard substratum.
	Houtman Abrolhos Islands Recherche Archipelago
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al., 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie et al., 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the SWMR.
	Houtman Abrolhos Islands
Sandy Beaches	Sandy beaches within the SWMR are important for both resident and migratory seabirds and shorebirds and can also host breeding populations of the Australian sea lion. They are found along many coastlines of the nearshore environments of the SWMR. In addition to this, beaches in the SWMR provide a variety of socio-economic values including tourism, commercial and recreational fishing, and support other recreational activities.
	Houtman Abrolhos Islands Marmion Marine Park Ngari Capes Marine Park Walpole and Nornalup Inlets Marine Park

Table 4-3 Habitats and Biological Communities within the NMR

Habitat/Community	Location
Offshore habitats and biological communities	
Soft sediment with infauna	Most of the offshore environment of the NMR is characterised by relatively flat expanses of soft sediment seabed. The soft sediments of the region are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms.
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. The variability in substrate composition may contribute to the presence of unique ecosystems. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments.
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF
Coral Reef	Offshore coral reefs within the NMR are generally associated with a series of submerged shoals and banks. The shoals/banks in the region support tropical marine biota consistent with that found on emergent reef systems of the Indo West Pacific region such as Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef (Heyward et al., 1997).
	Pinnacles of the Bonaparte Basin KEF Evans Shoal Tassie Shoal Blackwood Shoal
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally live in areas that have strong currents and hard substratum and typically associated with the deeper habitats of the submerged shoals and banks, and canyon features.
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF Tributary Canyons of the Arafura Depression KEF Evans Shoal Tassie Shoal Goodrich Bank
Nearshore	
Coral Reef	Within the NMR corals occur both as reefs and in non-reef coral communities. Nearshore reefs include patch reefs and fringing reefs sparsely distributed within the region. Coral reefs within the NMR provides breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks.
	Submerged coral reefs of the Gulf of Carpentaria KEF Darwin Harbour
Seagrass and Macroalgae communities	Seagrasses provide key habitats in the NMR. They stabilise coastal sediments and trap and recycle nutrients. They provide nursery grounds for commercially harvested fish and prawns and provide feeding grounds for dugongs and green turtles. Seagrass distribution in the region is largely associated with sheltered small bays and inlets including shallow waters surrounding inshore islands.
	Field Island The mainland coastline adjacent to Kakadu National Park

Habitat/Community	Location
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals, and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally inhabit areas that have strong currents and hard substratum.
	Cape Helveticus
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie et al., 2006). Mangroves provide habitat for waterbirds and support many commercially and recreationally important fish and crustacean species for parts of their life cycles. They buffer the coast from large tidal movements, storm surges and flooding.
	Tiwi Islands Darwin Harbour The mainland coastline adjacent to the Daly River
Sandy Beaches	Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NMR and are important for both resident and migratory seabirds and shorebirds. Sandy beaches can also provide an important habitat for turtle nesting. They are located along many coastlines of the nearshore environments of the islands and mainland shores of the NMR.
	Tiwi Islands Cobourg Peninsula Joseph Bonaparte Gulf

5. FISHES, SHARKS AND RAYS

5.1 Regional Context

Western Australian waters provide important habitat for listed fishes, sharks, and rays including areas that support key life stages such as breeding, foraging, and migration routes for fish species. Pelagic and demersal fishes occupy a range of habitats throughout each of the regions, from coral reefs to open offshore waters, and are an extremely important component of ecosystems, providing a link between primary production and higher predators, with many species being of conservation value and important for commercial and recreational fishing.

The NWMR supports a wide diversity of global fish species. Of the approximately 500 shark species found worldwide, 94 are found in the region (DEWHA, 2008). Approximately 54 species of syngnathids (seahorses, seadragons, pipehorses and pipefishes) and one species of solenostomids (ghostpipefishes) are also known to occur in the NWMR or adjacent State waters (DSEWPAC, 2012a).

The fish fauna of the SWMR includes more than 900 species occupying a large variety of habitats. However, only three species of bony fishes known to occur in the region are listed under the EPBC Act as threatened or marine species, and seven listed species of shark (DSEWPAC, 2012b).

The NMR is considered an important area for the sawfish and river shark species group, with five species of sawfishes and river sharks listed under the EPBC Act known to occur in the region (DSEWPAC, 2012c). Approximately 28 species of syngnathids and two species of solenostomids are listed marine and known to occur in the NMR, however there is a paucity of knowledge on the distribution, relative abundance and habitats of these species in the region (DEWHA, 2008).

The following sections focus on the fish species (including sharks and rays) listed as threatened or migratory that are known to occur within the NWMR. In addition, listed, conservation-dependent fish and shark species for the NWMR are described. A detailed account of commercial and recreational fisheries that operate in the region is provided in **Section 12**.

Table 5-1 outlines the threatened and migratory fish species that may or are known to occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice. **Table 5-2** includes fish species listed as conservation dependent that may occur within the NWMR, NMR and SWMR.

Table 5-1 Fish species (including sharks and rays) identified by the EPBC Act PMST that may occur within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (WA)[5]	IUCN Red List of Threatened Species (non-statutory)[6]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Migratory	Endangered	Conservation Advice *Rhincodon typus* whale shark. (Threatened Species Scientific Committee, 2015d)
Carcharias taurus	Grey nurse shark (West-coast population)	Vulnerable	N/A	Marine	Vulnerable	Critically Endangered	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DOE, 2014)
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Vulnerable	Vulnerable	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPAC, 2013b)
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Marine	Migratory	Endangered	N/A
Isurus paucus	Longfin mako	N/A	Migratory	Marine	Migratory	Endangered	N/A
Lamna nasus	Porbeagle shark Mackerel shark	N/A	Migratory	Marine	Migratory	Vulnerable	N/A
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	Critically Endangered	N/A
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	Migratory	Critically Endangered	N/A
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Critically Endangered	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Pristis pristis	Largetooth (freshwater) sawfish	Vulnerable	Migratory	Marine	Priority	Critically Endangered	
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	
Glyphis garricki	Northern river shark	Endangered	N/A	Marine	Priority	Vulnerable	
Manta alfredi	Reef manta ray	N/A	Migratory	Marine	Migratory	Vulnerable	N/A
Manta birostris	Giant manta ray	N/A	Migratory	Marine	Migratory	Endangered	N/A

[5] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[6] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

Table 5-2 EPBC Act listed Conservation Dependent species of fishes and sharks that may occur in the NWMR, NMR and SWMR

Species Name	Common Name	Likely Occurrence / Distribution	Listing Advice
Hoplostethus atlanticus	Orange roughy, Deep-sea perch, Red roughy	SWMR	No conservation listing advice for this species. Refer to the Marine bioregional plan for the SWMR (DSEWPAC, 2012b) for further information. Managed under AFMA's Orange Roughy Stock Rebuilding Strategy (AFMA, 2014)
Sphyrna lewini	Scalloped hammerhead	NWMR, NMR and SWMR[7]	Threatened Species Scientific Committee (2018)
Galeorhinus galeus	School shark, Eastern school shark, Snapper shark, Tope, Soupfin shark	SWMR	Threatened Species Scientific Committee (2009)
Centrophorus uyato	Little gulper shark	NWMR and SWMR	No conservation listing advice for this species. Refer to listing advice (Threatened Species Scientific Committee, 2013)

[7] A recurrent aggregation of scalloped hammerheads has been recorded within the Shoalwater Islands Marine Park (32° S; 115° E), 240 km south of Jurien Bay, observed from drone footage collected during the 2019 and 2020 Austral summers. The species has rarely been recorded south of Jurien Bay previously (López et al., 2022).

5.2 Protected Sharks, Sawfishes and Rays in the NWMR

The EPBC Act Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified seven species of shark and five species of river shark or sawfish listed as threatened and/or migratory within the NWMR. In addition, two species of ray (the reef manta ray and giant manta ray) are listed as migratory within the region (refer **Table 5-3**).

5.2.1 Sharks and Sawfishes

The shark species that may or are known to occur within the NWMR include: the whale shark, grey nurse shark, white shark, shortfin mako, and longfin mako (**Table 5-3**).

Five species of river shark or sawfish that may or are known to occur in the NWMR include: the narrow sawfish, northern river shark, freshwater sawfish, green sawfish and dwarf sawfish (**Table 5-3**Error! Reference source not found.).

There are identified biologically important areas (BIAs) within the NWMR for the whale shark, freshwater sawfish, green sawfish, and dwarf sawfish (**Table 5-5**).

Table 5-3 Information on the EPBC-listed threatened shark, fish and sawfish species that may or are known to occur within the NWMR.

Species	Preferred Habitat and Diet	Habitat Location
Whale shark	Preferred habitat: They have a widespread distribution in tropical and warm temperate seas, throughout oceanic and coastal Australian waters (Last and Stevens, 2009). Diet: Whale shark are planktivorous and feed on a variety of planktonic species including krill, jellyfish, and crab larvae (Last and Stevens, 2009).	Ningaloo Reef is the main known aggregation site for whale sharks in Australian waters and has the largest density of whale sharks per kilometre in the world (Martin, 2007). Acoustically tagged whale sharks have been detected on the North-west Shelf in June, July and October-January (Thomson et al. 2021). Satellite tagging and sightings of whale sharks off the Western Australian coast indicate that whilst whale sharks aggregate in higher numbers at Ningaloo Reef seasonally, they may be present year-round (Norman et al., 2017). Refer **Table 5-5** for the BIA summary for the whale shark.
Grey nurse shark (West-coast population)	Preferred habitat: Most found in temperate waters on, or close to, the bottom of the continental shelf, from close inshore to depths of about 200 m (McAuley, 2004; Kyne et al., 2021). Diet: A variety of teleost and elasmobranch fishes and some cephalopods (Gelsleichter et al., 1999; Smale, 2005).	Details of movement patterns of the western sub-population are unclear (McAuley, 2004) and key aggregation sites have not been formally identified within the NWMR (Chidlow et al., 2006). The NWMR represents the northern limit of the West-coast population. Sighting and bycatch data have indicated grey nurse sharks are present near Exmouth and Shark Bay between May - December (Hoschke et al., 2023).
White shark	Preferred habitat: The species typically occurs in temperate coastal waters between the shore and the 100 m depth contour; however, adults and juveniles have been recorded diving to depths of 1000 m (Bruce et al., 2006; Bruce, 2008). Diet: Smaller white sharks (less than 3 m length) feed primarily on teleost and elasmobranch fishes,	There are no known aggregation sites for white sharks in the NWMR, and this species is most often found south of North-west Cape, in low densities (DSEWPAC, 2012a). Given the migratory nature of the species, it most likely has a broad

Species	Preferred Habitat and Diet	Habitat Location
	broadening their diet as larger sharks to include marine mammals (Last and Stevens, 2009).	distribution within the NWMR. No BIAs identified for NWMR.
Shortfin mako	Preferred habitat: The shortfin mako shark is a pelagic species with a circumglobal, wide-ranging oceanic distribution in tropical and temperate seas (Mollet et al., 2000). Tagging studies indicate shortfin makos spend most of their time in water less than 50 m deep but with occasional dives up to 880 m (Abascal et al., 2011; Stevens et al., 2010). Satellite telemetry data suggest shortfin makos have multiple movement phases, displaying both high connectivity between Australian populations and periods of residency (Corrigan et al., 2018). Diet: Feeds on a variety of prey, such as teleost fishes, other sharks, marine mammals, and marine turtles (Campana et al., 2005).	Given the migratory nature of the species, it most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Longfin mako	Preferred habitat: A pelagic species with a wide-ranging, patchy, oceanic distribution in tropical and temperate seas (Mollet et al., 2000; Kyne et al., 2021). They have been recorded at depth ranges of 0–1,752 m (Kyne et al., 2021). Diet: Primarily teleost fishes and cephalopods (primarily squid) (Last and Stevens, 2009).	Records on longfin mako sharks are sporadic and their complete geographic range is not well known (Reardon et al., 2006). Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Mackerel/Porbeagle shark	Preferred habitat: The porbeagle shark primarily inhabits offshore waters around the edge of the continental shelf. They occasionally move into coastal waters, but these movements are temporary (Campana and Joyce, 2004; Francis et al., 2002). The porbeagle shark is known to dive to depths exceeding 1300 m (Campana et al., 2010; Saunders et al., 2011). Depth range records are 0-370 m (Kyne et al., 2021). Diet: Primarily teleost fish, elasmobranchs, and cephalopods (primarily squid) (Joyce et al., 2002; Last and Stevens, 2009).	In Australia, the species occurs in waters from southern Queensland to South-west Australia (Last and Stevens, 2009). Distribution within the NWMR is unknown, but there are several records for this species within the NWS (Atlas of Living Australia (ALA)).
Oceanic whitetip shark	Preferred habitat: The oceanic whitetip shark is globally distributed in warm-temperate and tropical oceans (Andrzejaczek et al., 2018). The species may occur in tropical and sub-tropical offshore and coastal waters around Australia. They primarily occupy pelagic waters in the upper 200 m of the water column; however, they have been observed diving to depths of around 1000 m, potentially associated with foraging behaviour (Howey-Jordan et al., 2013; D'Alberto et al., 2017). The species is highly migratory, travelling large distances between shallow reef habitats in coastal waters and oceanic waters (Howey-Jordan et al., 2013). The species does exhibit a strong preference for warm and shallow waters above 120 m. Diet: Opportunistic feeders and generally target a variety of finfishes and pelagic squid, depending on habitat. Targets pelagics such as tuna in open ocean as noted by the large bycatch numbers in the long line fisheries.	Given the migratory nature of the species, it most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Narrow sawfish	Preferred habitat[1]: Shallow coastal, estuarine, and riverine habitats, however it may occur in waters up to 40 m deep (D'Anastasi et al., 2013).	Shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens, 2009).

Species	Preferred Habitat and Diet	Habitat Location
	Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	
Northern river shark	Preferred habitat[1]: Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans et al., 2009; Thorburn and Morgan, 2004). Adults have been recorded only in marine environments. Juveniles and sub-adults have been recorded in freshwater, estuarine and marine environments (Pillans et al., 2009). Depth range of up to 23 m (Kyne et al., 2021). Diet: Variety of fish and crustaceans (Stevens et al., 2005).	The northern river shark has a relatively restricted northern Australian range (although with an extent of occurrence >20,000 km²) (Kyne et al., 2021). Within the NWMR records have come from both the West and East Kimberley, including King Sound, the Ord and King rivers, West Arm of Cambridge Gulf and also from Joseph Bonaparte Gulf (Thorburn and Morgan, 2004; Stevens et al., 2005; Thorburn, 2006; Field et al., 2008; Pillans et al., 2008, Whitty et al., 2008; Wynen et al., 2008).
Largetooth (freshwater) sawfish	Preferred habitat: Sandy or muddy bottoms of shallow coastal waters, estuaries, river mouths and freshwater rivers, and isolated water holes. Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	The largetooth sawfish has a wide Northern Australia range (Kyne et al., 2021). The Kimberley region, particularly the Fitzroy River, is identified as an important nursery site (Bateman et al. 2024). The Exmouth Gulf represents the approximate southern limit for the largetooth (freshwater) sawfish, although there are a few historical records further south (Bateman et al. 2024). Refer to **Table 5-5** for the BIA summary for the Largetooth (freshwater) sawfish.
Green sawfish	Preferred habitat[1]: Inshore coastal environments including estuaries, river mouths, embayments, and along sandy and muddy beaches, as well as offshore marine habitat (Stevens et al., 2005; Thorburn et al., 2003). They are found at depths of up to 70 m (Kyne et al., 2021). Diet: Schools of baitfish and prawns (Poganoski et al., 2002), molluscs and small crustaceans (Cliff and Wilson, 1994).	An aggregation of green sawfish (*Pristis zijsron*) has been identified in the Garig Gunak Barlu National Park (Cobourg Peninsula, NMR). Davies et al., 2022) suggests this may be a nursery area. The Ashburton River Estuary (Onslow region) has been recorded as a nursery site, with juveniles also observed along the Pilbara coast and Exmouth Gulf (Bateman et al., 2024). Refer **Table** 5-5 for the BIA summary for the green sawfish.
Dwarf sawfish	Preferred habitat[1]: Shallow (up to 20 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens et al., 2008; Kyne et al., 2015). Diet: Shoaling fish such as mullet, molluscs, and small crustaceans (Cliff and Wilson, 1994).	Literature indicates the most southern range for the dwarf sawfish is Port Hedland (Bateman et al., 2024). Refer **Table 5-5** for the BIA summary for the dwarf sawfish.

1 Preferred habitat as described within the Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b).

5.2.2 Rays

Rays are commonly found in the NWMR. Two listed and migratory species of ray are known to occur within the NWMR: the reef manta ray and giant manta ray.

No BIAs for either the reef or giant manta ray species have been identified in the NWMR.

Table 5-4 Information on migratory ray species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Reef manta ray	Preferred habitat: The reef manta ray is commonly sighted within productive nearshore environments, such as island groups, atolls or continental coastlines. However, the species has also been recorded at offshore coral reefs, rocky reefs, and seamounts (Marshall et al., 2009). Recorded depth range of 0-432 m (Kyne et al., 2021). Diet: Feed on planktonic organisms including krill and crab larvae.	A resident population of reef manta rays has been recorded at Ningaloo Reef. No BIAs identified for NWMR.
Giant manta ray	Preferred habitat: The species primarily inhabits near-shore environments along productive coastlines with regular upwelling, but they appear to be seasonal visitors to coastal or offshore sites including offshore island groups, offshore pinnacles and seamounts (Marshall et al., 2011). Recorded depth range of up to 1000 m (Kyne et al., 2021). Diet: Feed on planktonic organisms including krill and crab larvae.	The Ningaloo coast is an important area for giant manta rays from March to August (Preen et al., 1997). No BIAs identified for NWMR.

5.3 Fish, Shark and Sawfish Biological Important Areas in the NWMR

A review of The Australian Marine Spatial Information System (GA, 2024) identified Biologically Important Areas (BIAs) for four species of fish, shark and sawfish (whale shark, largetooth (freshwater) sawfish, green sawfish and dwarf sawfish) within the NWMR. The BIAs for the whale shark and the sawfish species include foraging, nursing, juvenile and pupping areas. These are described in **Table 5-5**.

Table 5-5 Fish, whale shark and sawfish BIAs within the NWMR (source: AMSIS, accessed 14/08/2024)

	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Reproduction - Pupping	Reproduction - Nursing	Juvenile	Foraging
Whale shark	✓	✓	✓	No pupping BIA identified within the NWMR	No nursing BIA identified within the NWMR	N/A	Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July) Foraging northward from Ningaloo along the 200 m isobath (July – Nov).
Green sawfish	✓	✓	-	Pupping in Cape Keraudren (pupping occurs in summer in a narrow area adjacent to shoreline) Pupping in Willie Creek Pupping in Roebuck Bay Pupping in Cape Leveque Pupping in waters adjacent to Eighty Mile Beach Pupping (likely) in Camden Sound	Nursing in Cape Keraudren Nursing in waters adjacent to Eighty Mile Beach	No juvenile BIA identified within the NWMR.	Foraging in Cape Keraudren Foraging in Roebuck Bay Foraging in Cape Leveque Foraging in Camden Sound
Largetooth (freshwater) sawfish	✓	✓	-	Pupping in the mouth of the Fitzroy River (January to May) Roebuck Bay (Jan – May) Pupping likely in waters adjacent to Eighty Mile Beach (Jan- May)	Nursing (likely) in King Sound	Waters adjacent to Eighty Mile Beach Roebuck Bay	Foraging in the mouth of the Fitzroy River (January to May) Foraging in King Sound Roebuck Bay (Jan – May) Foraging in waters adjacent to Eighty Mile Beach
Dwarf sawfish	✓	✓	-	Pupping in King Sound Pupping in waters adjacent to Eighty Mile Beach	Nursing in King Sound Nursing waters adjacent to Eighty Mile Beach	King Sound	Foraging in King Sound Foraging in Camden Sound

	Woodside Activity Area			BIAs			
	Browse	**NWS/S**	**NWC**	**Reproduction - Pupping**	**Reproduction - Nursing**	**Juvenile**	**Foraging**
							Foraging in waters adjacent to Eighty Mile Beach

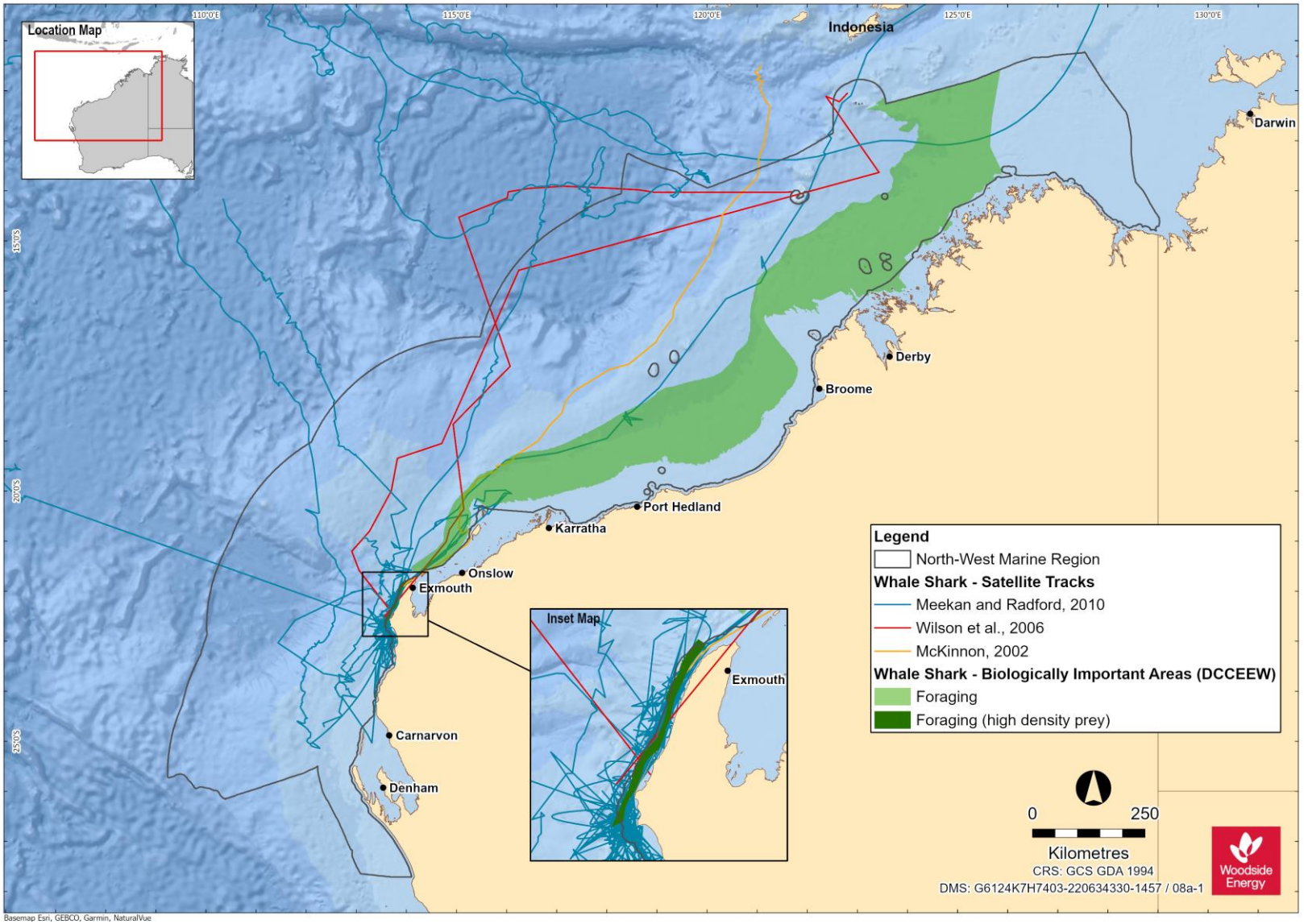


Figure 5-1 Whale shark BIAs for the NWMR and tagged whale shark satellite tracks (data source for BIAs: DCCEEW, 2024b)

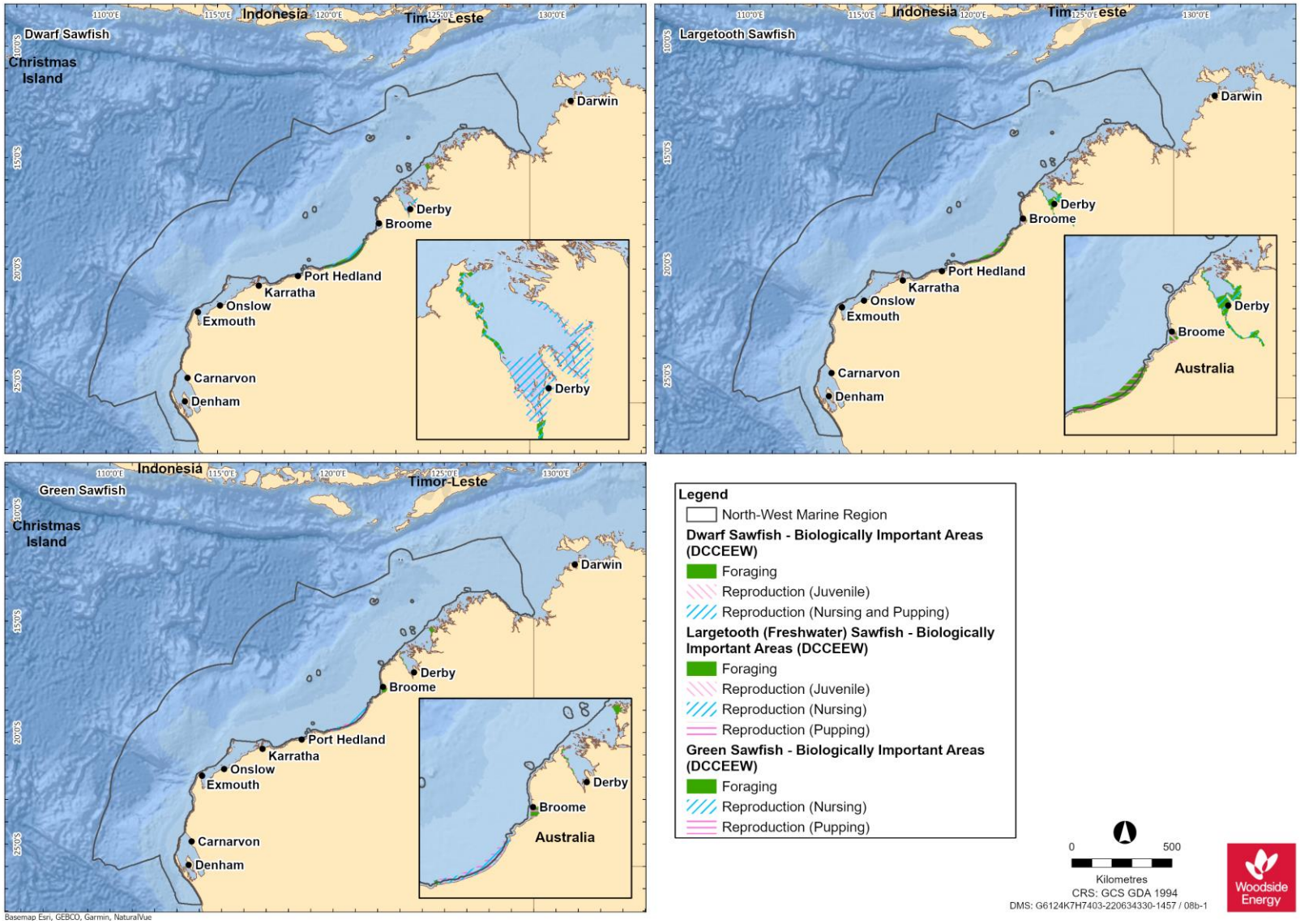


Figure 5-2 Sawfish BIAs for the NWMR (data source: DCCEEW, 2024b)

5.4 Fish Assemblages of the NWMR

5.4.1 Regional Context for Fish Assemblages of NWMR

The NWMR contains a diverse range of fishes of tropical Indo-west Pacific affinity (Allen et al., 1988). The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last et al. (2005) recorded 1,431 species from the three bioregions encompassing the continental slope, whilst also acknowledging some information gaps. A study of fish assemblages of the Dampier Archipelago found habitat type and complexity influenced fish abundance, with significantly higher abundance in mangrove and coral habitats (Moustaka, et al. 2024).

The NWMR is known for its demersal slope fish assemblages; the continental slope of the Timor Province and the North-west Transition supports more than 418 and 505 species of demersal fishes respectively, of which 64 are considered to be endemic. This is the second richest area for demersal fish species across the entire Australian continental slope. Conversely, the broad Southern Province, which covers most of southern Australia, supports 463 species withonly 26 possibly being endemic. The continental slope demersal fish assemblages of the NWMR have been identified as a KEF (DEWHA, 2008), as described in **Section 10**.

The ancient coastline at 125m depth contour KEF within the NWMR is thought to support enhanced diversity. Drivers of fish species richness, biodiversity and assemblage composition have been assessed, finding that depth, seafloor complexity and habitat type explain richness and abundance of fish assemblages (Currey- Randall et al., 2021). This study also found that fish communities along the ancient coastline KEF are similar to other mesophotic areas on the NWS. Most of the surveyed feature was characterised by soft sediment and highly mobile fish species (Currey-Randall et al., 2021).

The NWMR also features a diversity of pelagic fishes (those living in the pelagic zone) and bentho-pelagic fishes, including tuna, billfish, bramids, lutjanids, serranids and some sharks (DEWHA, 2007a). These species feed on salps and jellyfish, and more often on secondary consumers such as squid and bait fish. Water depth provides an indication of the level of interaction between pelagic and benthic communities within the NWMR; in waters deeper than 1000 m, for instance, the trophic system is pelagically-driven and benthic communities rely on particulates that fall to the seafloor (DEWHA, 2007a).

Pelagic fishes play an important ecological role within the NWMR; small pelagic fishes, such as lantern fish, inhabit a range of marine environments, including inshore and continental shelf waters and form a vital link in and between many of the region's trophic systems, feeding on pelagic phytoplankton and zooplankton and providing a food source for a wide variety of predators including large pelagic fishes, sharks, seabirds and marine mammals (Bulman, 2006; Mackie et al., 2007). Large pelagic fishes, such as tuna, mackerel, swordfish, sailfish and marlin are found mainly in oceanic waters and occasionally on the continental shelf (Brewer et al., 2007). Both juvenile and adult phases of the large pelagic species are highly mobile and have a wide geographic distribution, although the juveniles more frequently inhabit warmer or coastal waters (DEWHA, 2008).

5.4.2 Listed Fish Species in the NWMR

The family Syngnathidae is a group of bony fishes that includes seahorses, pipefishes, pipehorses and seadragons. Along with syngnathids, members of the related Solenostomidae family (ghost pipefishes) are also found in the NWMR (DSEWPAC, 2012a).

There are 55 solenostomid and syngnathid species that are listed marine species that may occur within the NWMR, although no species is currently listed as threatened or migratory, according to the PMST report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

Syngnathids live in nearshore and inner shelf habitats, usually in shallow coastal waters, among seagrasses, mangroves, coral reefs, macroalgae dominated reefs, and sand or rubble habitats (Dawson, 1985; Lourie et al., 1999, Lourie et al., 2004; Vincent, 1996). Two species, the winged seahorse (*Hippocampus alatus*) and western pipehorse (*Solegnathus sp. 2*) have been identified in deeper waters of the NWMR (up to 200 m) (DSEWPAC, 2012a), however, these species were not identified by the Protected Matters search of the NWMR.

Knowledge about the distribution, abundance and ecology of both syngnathids and solenostomids in the NWMR is limited. No BIAs for syngnathids and solenostomids have been identified in the NWMR.

5.4.3 Browse

The proposed Browse activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July - November) (**Table 9-1**)
- Largetooth (freshwater) sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the shark and sawfish species are outlined in **Table 5-5** and **Figure 5-**.

The proposed Browse activity area has partial overlap with the continental slope demersal fish communities KEF.

5.4.4 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July - November) (**Table 9-1**)
- freshwater sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the whale shark and sawfish species are outlined in **Table 5-5** and **Figure 5-**.

The NWS / Scarborough activity area has partial overlap with the continental slope demersal fish communities KEF. The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last et al., 2005).

5.4.5 North-west Cape

The North-west Cape activity area includes biologically important foraging habitat for the whale shark:

  - Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March- July) (**Table 9-1**); and
- Foraging northward from Ningaloo along the 200 m isobath (July- November) (**Table 9-1**)
  - BIAs for the whale shark are outlined in **Table 5-5** and **Figure 5-**.

The North-west Cape activity area coincides with part of the continental slope demersal fish communities KEF.

6. MARINE REPTILES

6.1 Regional Context for Marine Reptiles

The NWMR contains important habitat for listed marine reptiles, including areas that support key life stages such as nesting, internesting, migration and foraging for marine turtle species, and habitats supporting resident sea snake and crocodile populations.

Six of the seven marine turtle species occur in Australian waters, and all six (the green turtle, hawksbill turtle, loggerhead turtle, flatback turtle, leatherback turtle and olive ridley turtle) occur in the NWMR and NMR, with four species of marine turtles occurring in the SWMR (see Protected Matters reports in APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer et al., 2016), of which four are endemic to reef habitats in the remote parts of the region (see NWMR Protected Matters report in **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

There are significantly fewer marine reptile species that frequently occur within the SWMR and presently include four species of listed marine turtle and six sea snake species. Other species of sea snake may occur because of the southward-flowing Leeuwin Current as vagrants in the region (DSEWPAC, 2012b) (see SWMR Protected Matters report in **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR).

28 listed sea snake species ‘may’ occur in the NMR, as reported in the Protected Matters report in APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR.

The following sections focus on the listed marine reptile species known to occur within the NWMR.

Table 6-1 outlines the threatened and migratory marine reptile species that may or are known to occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 6-1 Marine reptile species identified by the EPBC Act PMST that may occur within or utilise habitats in the NWMR for key life cycle stages

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (WA)[8]	IUCN[1] Red List of Threatened Species (non-statutory)[9]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Marine	Endangered	Vulnerable	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
Chelonia mydas	Green turtle	Vulnerable	Migratory	Marine	Vulnerable	Endangered	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	Vulnerable	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	Data Deficient	
Lepidochelys olivacea	Olive Ridley turtle	Endangered	Migratory	Marine	Endangered	Vulnerable	
Varanus mitchelli	Mitchell's water monitor	Critically endangered	N/A	N/A	N/A	Critically Endangered	Conservation Advice for *Varanus mitchelli* (Mitchell's water monitor) (DCCEEW, 2023c)
Aipysurus apraefrontalis	Short-nosed sea snake	Critically endangered	N/A	Marine	Critically endangered	Data Deficient	Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Aipysurus foliosquama	Leaf-scaled sea snake	Critically endangered	N/A	Marine	Critically endangered	Data Deficient	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Aipysurus fuscus	Dusky sea snake	Under listing assessment [10]	N/A	Marine	N/A	Endangered	Conservation Advice for *Aipysurus fuscus* (dusky sea snake) (DCCEEW, 2023e)[7]
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	Migratory	Least Concern	N/A

[8] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)
[9] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)
[10] At time of writing (August 2024), Dusky sea snake proposed for inclusion on the EPBC Act threatened species list in the Endangered category (DCCEEW, 2023e).

6.2 Marine Turtles in the NMWR, SWMR and NMR Bioregions

According to the Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) six species of marine turtle known to occur within the NWMR are listed as threatened and migratory (three Vulnerable and three Endangered) under the EPBC Act—the green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), flatback (*Natator depressus*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtles (DSEWPAC, 2012a) (refer **Table 6-1**).

The NWMR supports globally significant breeding populations of four marine turtle species: the green, hawksbill, flatback and loggerhead turtle. Olive ridley turtles are known to forage within the NWMR, but there are only occasional records of the species nesting in the region. Leatherback turtles regularly forage over Australian continental shelf waters within the NWMR but there are also no records of the species nesting in the region (DSEWPAC, 2012a).

The six marine turtle species reported for the NWMR also occur within the NMR.

Four marine turtle species; the green, loggerhead, flatback, and leatherback turtle, have presumed feeding areas within the SWMR; however, no known nesting areas exist within the region (DSEWPAC, 2012b).

Discrete genetic stocks have evolved within each marine turtle species. This is the result of marine turtles returning to the location where they hatched. These genetically distinct stocks are defined by the presence of regional breeding aggregations. Stocks are composed of multiple rookeries in a region and are delineated by where there is little or no migration of individuals between nesting areas. Turtles from different stocks typically overlap at feeding grounds (Commonwealth of Australia, 2017). There are 17 genetic stocks across both the NWMR and NMR (nine in the NWMR, six in the NMR, and two overlapping both regions). Of these 17 genetic stocks, nine are known to occur within Woodside's three areas of activity (**Table 6-2**).

6.2.1 Life Cycle Stages

Marine turtles are highly migratory during non-reproductive life phases and have high site fidelity during breeding and nesting life phases. The majority of their lives are spent in the ocean, with only adult female marine turtles coming ashore to lay eggs in the sand above the high-water mark on natal beaches (Commonwealth of Australia, 2017). **Figure 6-1** summarises the generalised life cycle of marine turtles. Species-specific life cycle information is outlined within the Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017).

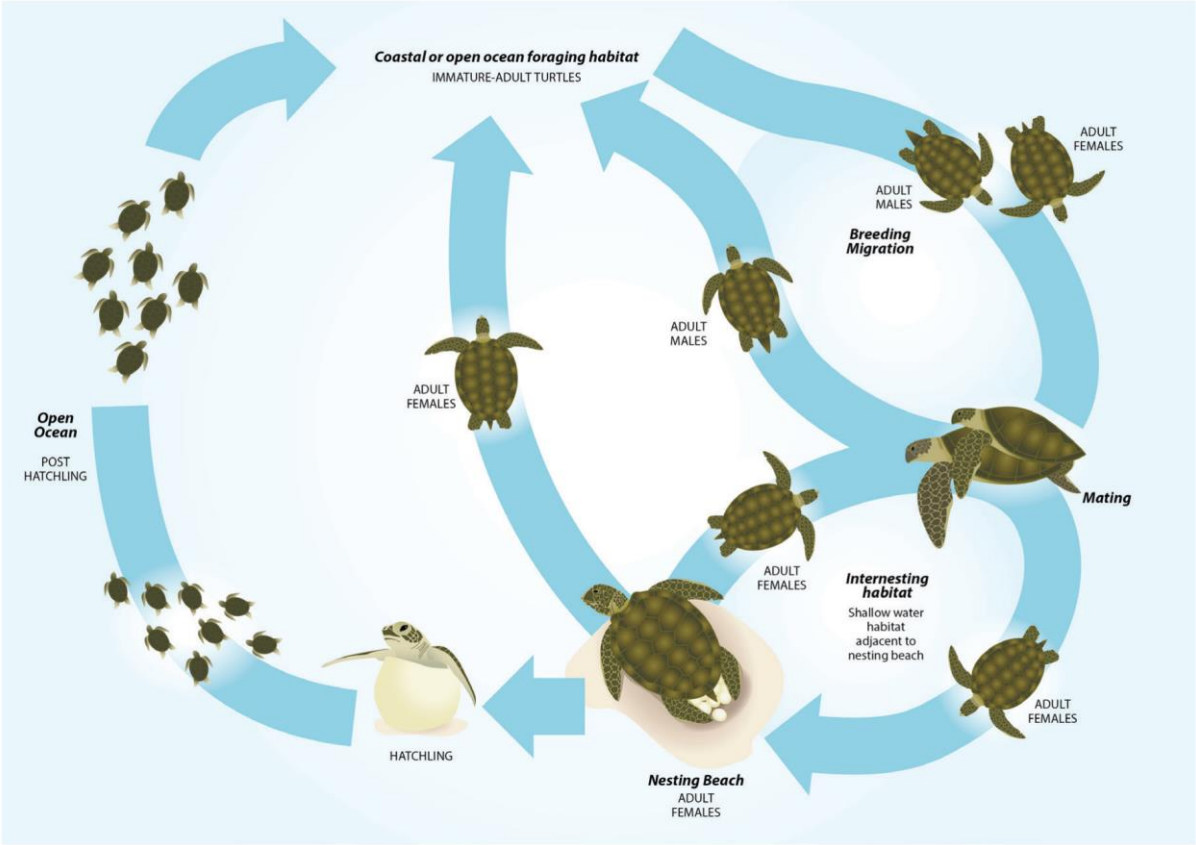


Figure 6-1 Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

6.2.2 Habitat Critical to Survival for Marine Turtles in the NWMR

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) identifies habitat critical to the survival of a species for marine turtle stocks under the EPBC Act. Habitat critical to survival is defined by the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* as areas necessary:

- for activities such as foraging, breeding or dispersal;
- for the long-term maintenance of the species (including the maintenance of species essential to the survival of the species);
- to maintain genetic diversity and long-term evolutionary development; and
- for the reintroduction of populations or recovery of the species.

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) has identified nesting locations and associated internesting areas as habitat critical to survival for four marine turtle species within the NWMR and these are identified, described and mapped in **Table 6-2** and **Figure 6-2**. No habitat critical to survival has been identified within the NWMR for olive ridley or leatherback turtles.

Table 6-2 outlines the relevant genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR.

Table 6-2 Genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Green Turtle							
NWS Stock (G-NWS)	✓	✓	✓	Adele Island Maret Island Cassini Island Lacepede Islands* Barrow Island* Montebello Islands (all with sandy beaches)* Serrurier Island Dampier Archipelago Thevenard Island Northwest Cape* Ningaloo Coast	20 km radius	Nov-Mar	Nearshore reef habitats in the photic zone.
Ashmore Reef Stock (G-AR)	✓	-	-	Ashmore Reef* Cartier Reef*		All year (peak: Dec-Jan)	
Scott Reef-Browse Island Stock (G-ScBr)	✓	-	-	Scott Reef (Sandy Islet)* Browse Island*		Nov-Mar	
Hawksbill Turtle							
Western Australia Stock (H-WA)	-	✓	-	Dampier Archipelago (including Rosemary Island and Delambre Island)* Montebello Islands (including Ah Chong Island, South East Island and Trimouille Island)* Lowendal Islands (including Varanus Island, Beacon Island and Bridled Island) Sholl Island	20 km radius	Oct-Feb	Nearshore and offshore reef habitats.

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Flatback Turtle							
Cape Domett Stock (F-CD)	✓	-	-	Cape Domett* Lacrosse Island	60 km radius	All year (peak: Jul-Sep)	Nearshore and offshore sub-tidal and soft bottomed habitats of offshore islands.
South-west Kimberley Stock (F-swKim)	-	✓	-	Eighty Mile Beach* Eco Beach* Lacepede Islands		Oct-Mar	
Pilbara Stock (F-Pil)	-	✓	-	Montebello Islands Mundabullangana Beach* Barrow Island* Cemetery Beach Dampier Archipelago (including Delambre Island* and Huay Island) Coastal islands from Cape Preston to Locker Island		Oct-Mar	
Unknown genetic stock Kimberley, Western Australia	✓	✓	-	Maret Islands Montilivet Islands Cassini Island Coronation Islands (includes Lamarck Island) Napier-Broome Bay Islands (West Governor Island, Sir Graham Moore Island – near Kalumbaru) Champagny, Darcy and Augustus Islands (Camden Sound)		May-July	

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (*Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Loggerhead Turtle							
Western Australia Stock (LH-WA)	-	-	✓	Dirk Hartog Island* Muiron Islands* Gnaraloo Bay* Ningaloo Coast	20 km radius	Nov-May	Nearshore and island coral reefs, bays and estuaries in tropical and warm temperate latitudes.

[1] *Major rookeries as outlined in the Recovery Plan (Commonwealth of Australia, 2017)*

[2] *Preferred habitat as outlined in the Recovery Plan (Commonwealth of Australia, 2017)*

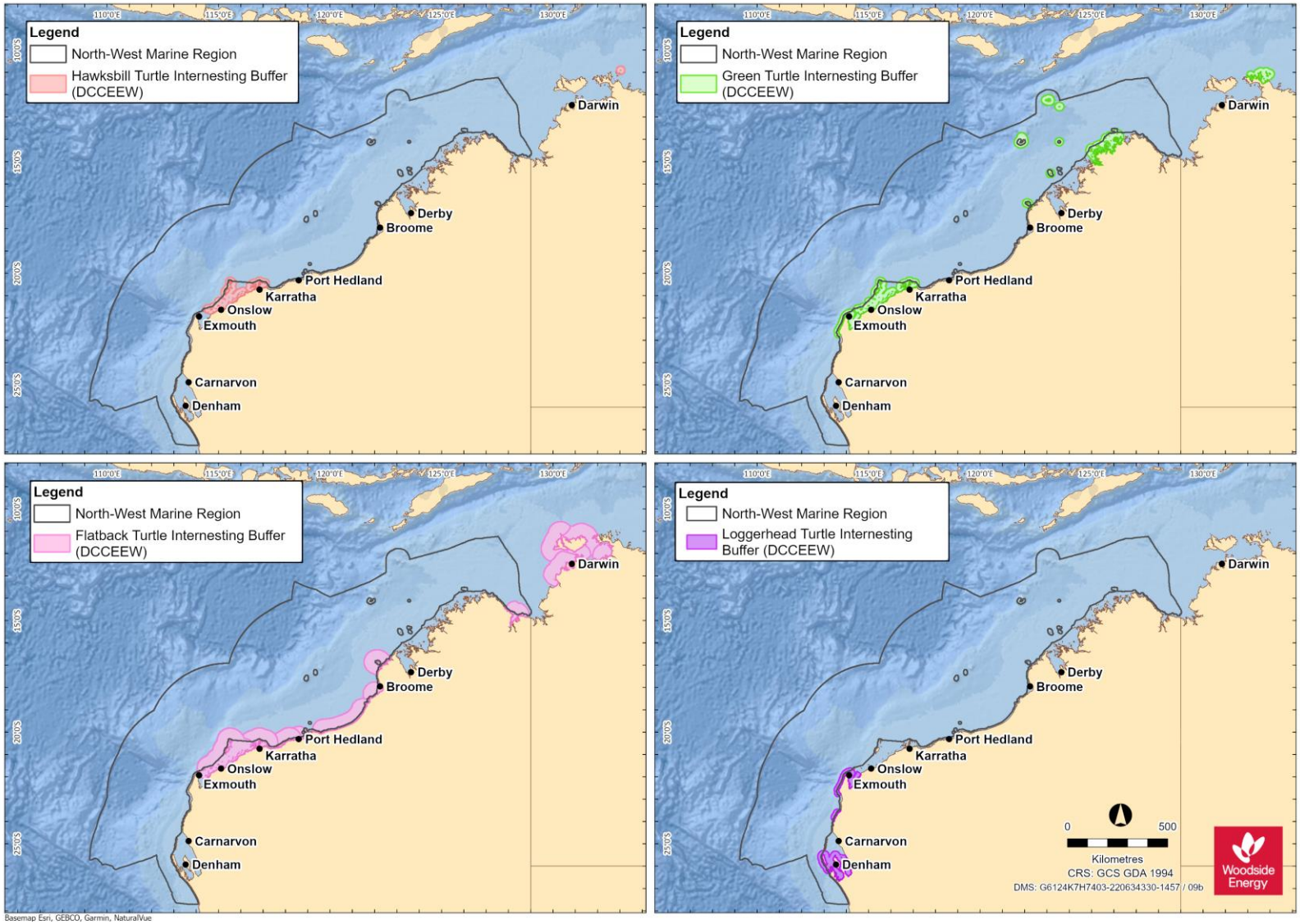


Figure 6-2 Marine turtle species habitat critical to survival (nesting beaches and internesting buffers) for the NWMR (data source: DCCEEW, 2024b)

6.3 Marine Turtle Biological Important Areas in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024), the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a) and the Recovery Plan for Marine Turtles in Australia (CoA, 2017) identified BIAs for the four marine turtle species that occur within the NWMR. These are described in **Table** 6-3**.**

Table 6-3 Marine turtle BIAs within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
Green turtle	✓	✓	✓	Barrow Island Montebello Islands (including Hermite Island, North West Island, Trimouille Island) Dampier Archipelago (islands to the west of the Burrup Peninsula) Ashmore Reef	Barrow Island Montebello Islands (including Hermite Island, North West Island, Trimouille Island) Middle Island Dampier Archipelago (islands to the west of the Burrup Peninsula) North and South Muiron Islands North West Cape Delambre Island Legendre Island and Huay Island Lacepede Islands Scott reef- Sandy Island Ashmore Reef Cartier Island Cassini Island	Locations of 20 km internesting buffer BIAs for green turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year round and seasonal 20 km internesting buffer BIAs are located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging inshore areas of Barrow Island Foraging at Montgomery Reef Foraging at Montebello Islands Foraging at Dixon Island Foraging around Ashmore Reef Foraging at Seringapatam Reef and Scott Reef Foraging in the De Grey River area to Bedout Island Foraging around the Islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around Dampier Archipelago (islands to the west of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging around Delambre Island Foraging in the Joseph Bonaparte Gulf	Migration corridor at Dampier Archipelago (islands to the west of the Burrup Peninsula). Green turtles can migrate more than 2600 km between their feeding and nesting grounds. Individual turtles foraging in the same area do not necessarily take the same migration route (Limpus et al., 1992). Ferreira et al. (2021) broadly identified two migratory corridors, one used by the NWS stock-Pilbara and another used by the NWS stock-Kimberley and the Scott-Browse stock with some overlap at the northern and southern extents respectively. This study showed that the foraging distribution of green turtles from two stocks in WA expands throughout North-west and northern Australian coastal waters, including the NT and Queensland.

[11] Migration BIA included in AMSIS (GA, 2024). General information for migratory behaviours also provided.

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
							Foraging in waters adjacent to James Price Point	
Hawksbill turtle	✓	✓	✓	Montebello Islands Barrow Island Lowendal Island Group Dampier Archipelago (to the west of the Burrup Peninsula)	Lowendal Island Group Montebello Islands (including Ah Chong and South East islands) Rosemary Island Delambre Island Barrow Island Varanus Island and Thevenard Island Dampier Archipelago (to the west of the Burrup Peninsula) Ningaloo Coast and Jurabi coast Sandy Islet at Scott Reef	Locations of 20 km internesting buffer BIAs for hawskbill turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year round and seasonal 20 km internesting buffer BIAs are located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Recent data shows foraging ranges from the north of Exmouth Gulf to offshore Broome (Fossette et al., 2021a). Foraging around the Lowendal Island group Foraging at Delambre Island Foraging around Dixon Island Foraging in the De Grey River area to Bedout Island Foraging around the islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around the islands of the Dampier Archipelago (to the west of the Burrup Peninsula) Foraging at Ashmore Reef	Migration corridor at Dampier Archipelago (islands to the West of the Burrup Peninsula). Individuals may migrate up to 2400 km between their nesting and foraging grounds (DSEWPAC, 2012a), although reproductive migration distances over 1000 km appear less common in Hawksbill turtles than other species (Fossette et al., 2021a). Recent satellite tracking data shows turtles migrating from WA rookeries remained on the continental shelf, with the majority following the coastline and dispersing in a North-easterly direction, with some turtles from the Montebello Archipelago and Lowendals moving in a South-westerly direction and some fstopping around Barrow Island. A migratory corridor was

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
								observed from Cape Preston to De Grey River (Fossette et al., 2021a)
Flatback turtle	✓	✓	-	Lacepede Islands Montebello Islands Dampier Archipelago (islands to the West of the Burrup Peninsula) Mating at Barrow Island	Thevenard Island - South coast (summer) high use on beaches with high dune height Barrow Island Montebello Islands (including Hermite Island, North West Island, Trimouille Island) Dampier Archipelago (islands to the west of the Burrup Peninsula) Delambre Island Legendre Island and Huay Island Dixon Island Intercourse Island West of Cape Lambert Various locations along the Pilbara coast between Karratha and Broome, including Cape Thouin, Mundabullangana, Cowrie Beach, Port Hedland (Cemetery Beach, Paradise Beach) and 80 Mile Beach	Locations of 80 km internesting buffer BIAs for flatback turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year-round and seasonal internesting buffer BIAs of 80 km are located around nesting sites, extending 20 km further than the habitat critical to survival. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging at the islands between Cape Preston and Onslow and inshore of Barrow Island. Foraging at Montebello Islands Foraging at Dampier Archipelago (islands to the West of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging at Delambre Island Foraging in the Joseph Bonaparte Depression Foraging in waters adjacent to James Price Point	Migration corridor at Dampier Archipelago (islands to the West of the Burrup Peninsula). The flatback turtle is a resident to Australian waters and spends 99% of its time within the Australian EEZ. A migratory corridor connects the coastlines between the Kimberley and Pilbara (Peel et al., 2024). There is evidence that some flatback turtles undertake long-distance migrations between breeding and feeding grounds (Limpus et al., 1983). However, flatback turtles generally do not have a pelagic phase to their lifecycle. Instead, hatchlings grow to maturity in shallow coastal waters thought to be close to their natal beaches (DSEWPAC, 2012a). A study predicting the dispersal of flatback turtle hatchlings found

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
					Lacepede Islands			that core areas were predominantly on the continental shelf (<200 m depth contour) during all dispersal phases, indicating that flatback turtles remain in neritic areas (Wilson et al., 2023).
Loggerhead turtle	✓	✓	-	No mating BIA identified within the NWMR	Dirk Hartog Island Muiron Islands Ningaloo and Jurabi coasts Montebello Islands Lowendal Island Rosemary Island Gnaraloo Station	Locations of 20 km internesting buffer BIAs for loggerhead turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a). Year-round and seasonal 20 km internesting buffer BIAs are located around nesting sites. Habitat critical to survival internesting buffer (**Table 6-2**) is the legally recognised area of protection under the EPBC Act	Foraging in the De Grey River area to Bedout Island Foraging on the Western Joseph Bonaparte Depression Foraging in the waters adjacent to James Price Point	No migration BIA identified within the NWMR Adult loggerhead turtles dispersing from Dirk Hartog Island beaches (near Shark Bay) have remained within WA waters from southern WA to the Kimberley. Turtles dispersing from the North-west Cape–Muiron Islands nesting area have ranged north as far as the Java Sea and the North-western Gulf of Carpentaria, and to South-west WA (DSEWPAC, 2012a)
Olive ridley turtle	✓	✓	-	No mating BIA identified within the NWMR	No nesting BIA identified within the NWMR	No internesting BIA identified within the NWMR	No foraging BIA identified within the NWMR, however may forage at the following locations: The Western Joseph Bonaparte Depression and Gulf	No migration BIA identified within the NWMR. Migration routes and distances between nesting beaches and foraging areas are not

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Mating	Nesting	Internesting	Foraging	Migration[11]
							Dampier Archipelago (islands to the West of the Burrup Peninsula)	known for Australian olive ridley turtles

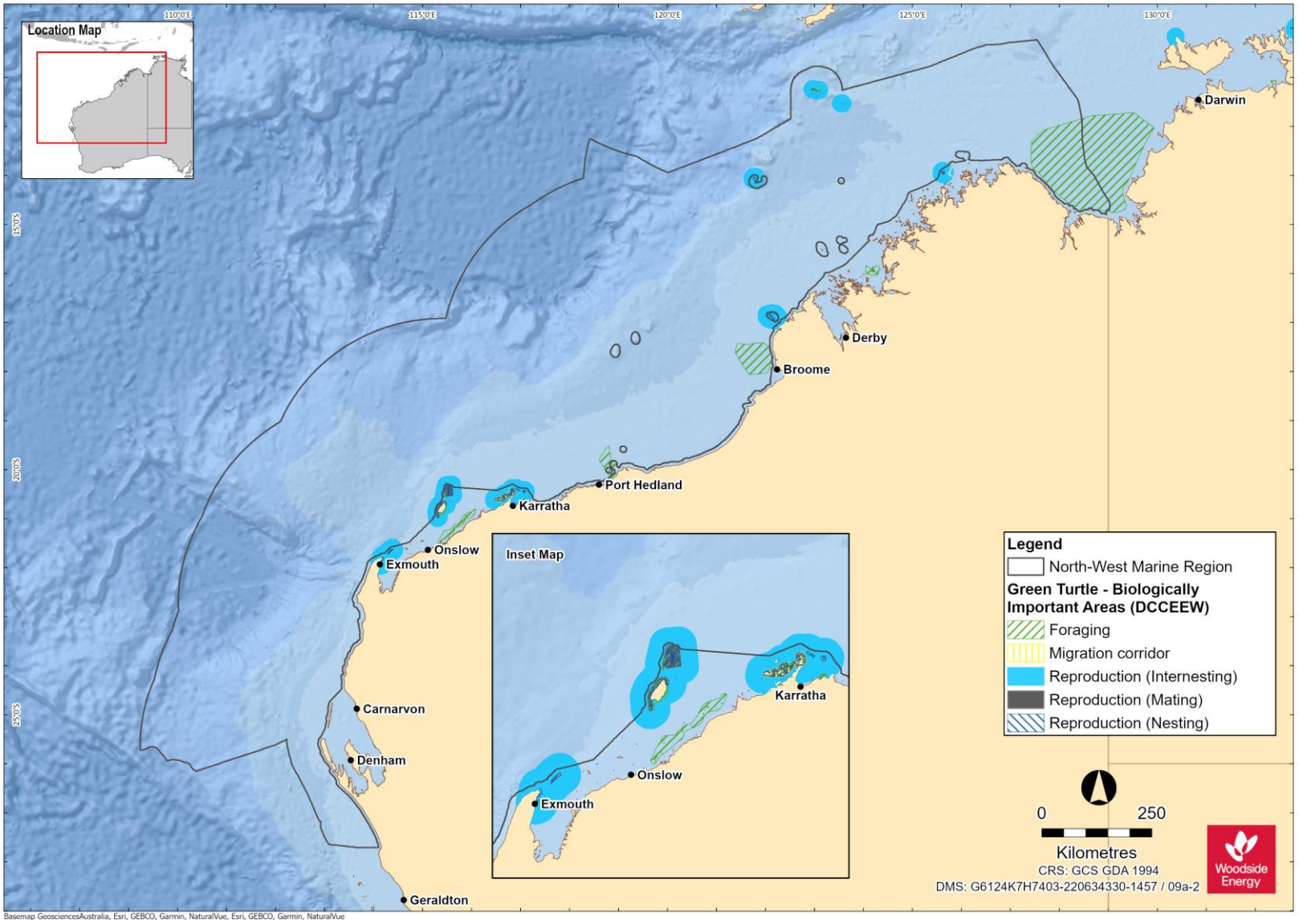


Figure 6-3 Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

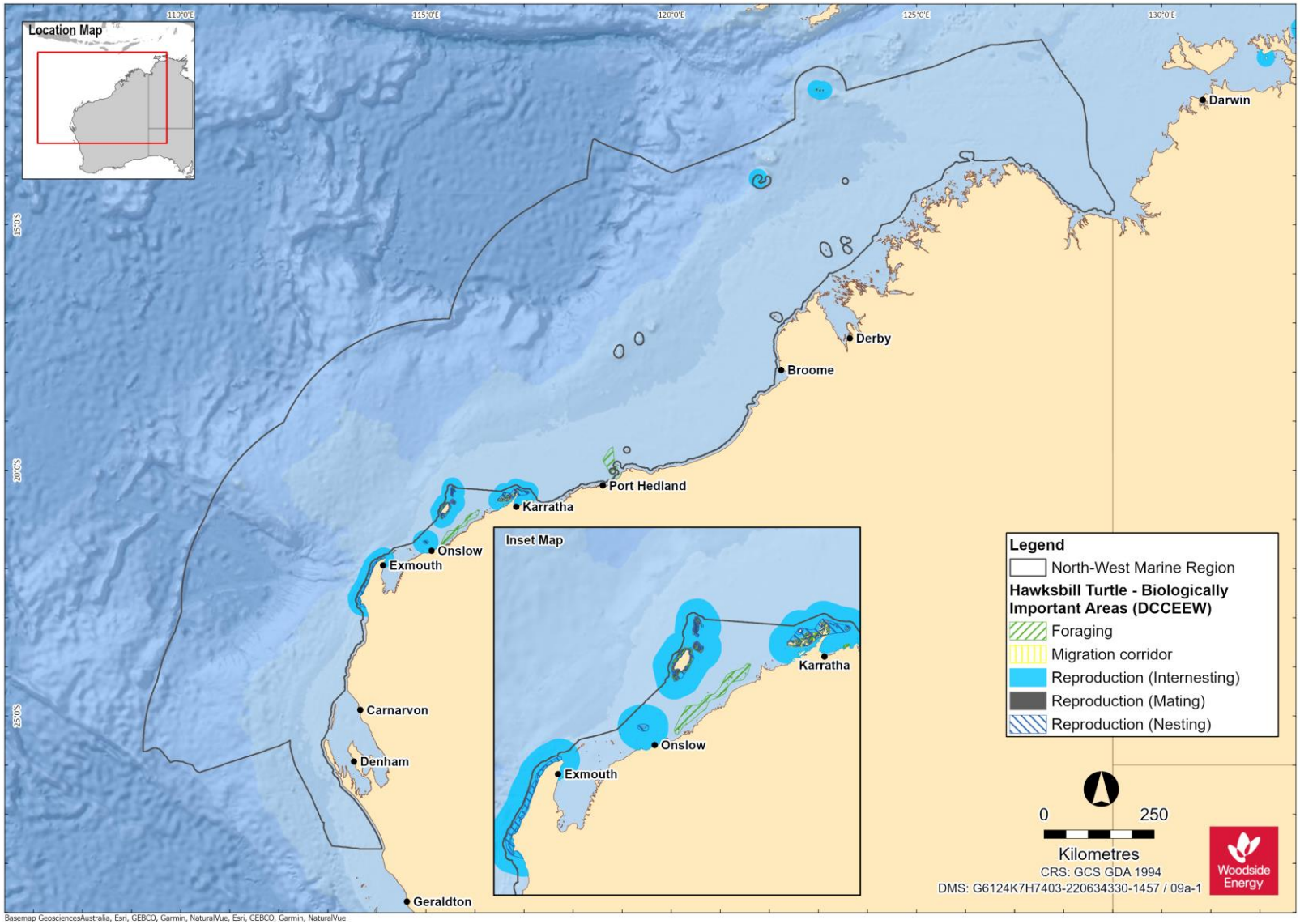


Figure - Hawksbill turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

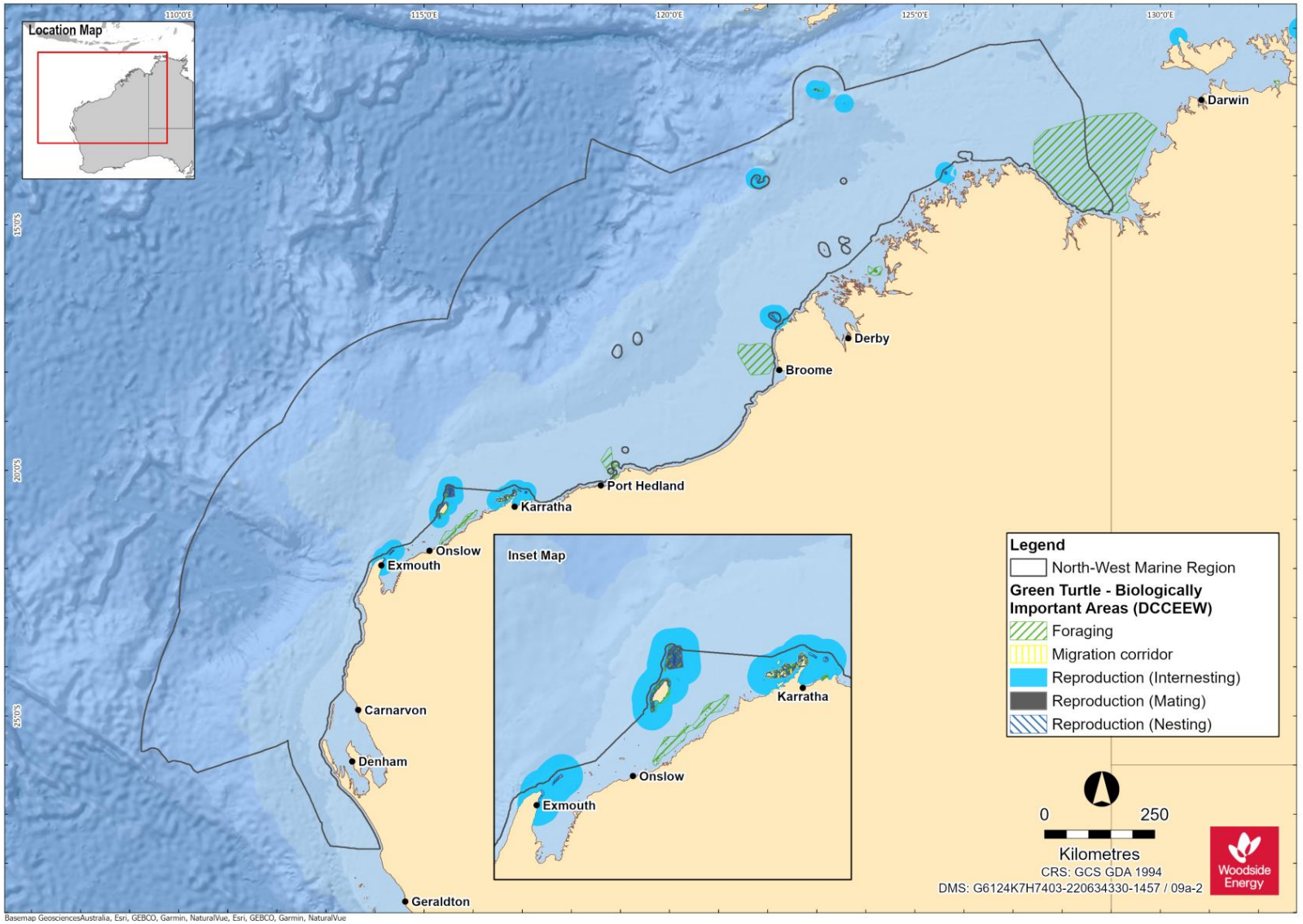


Figure 6-4 Flatback turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

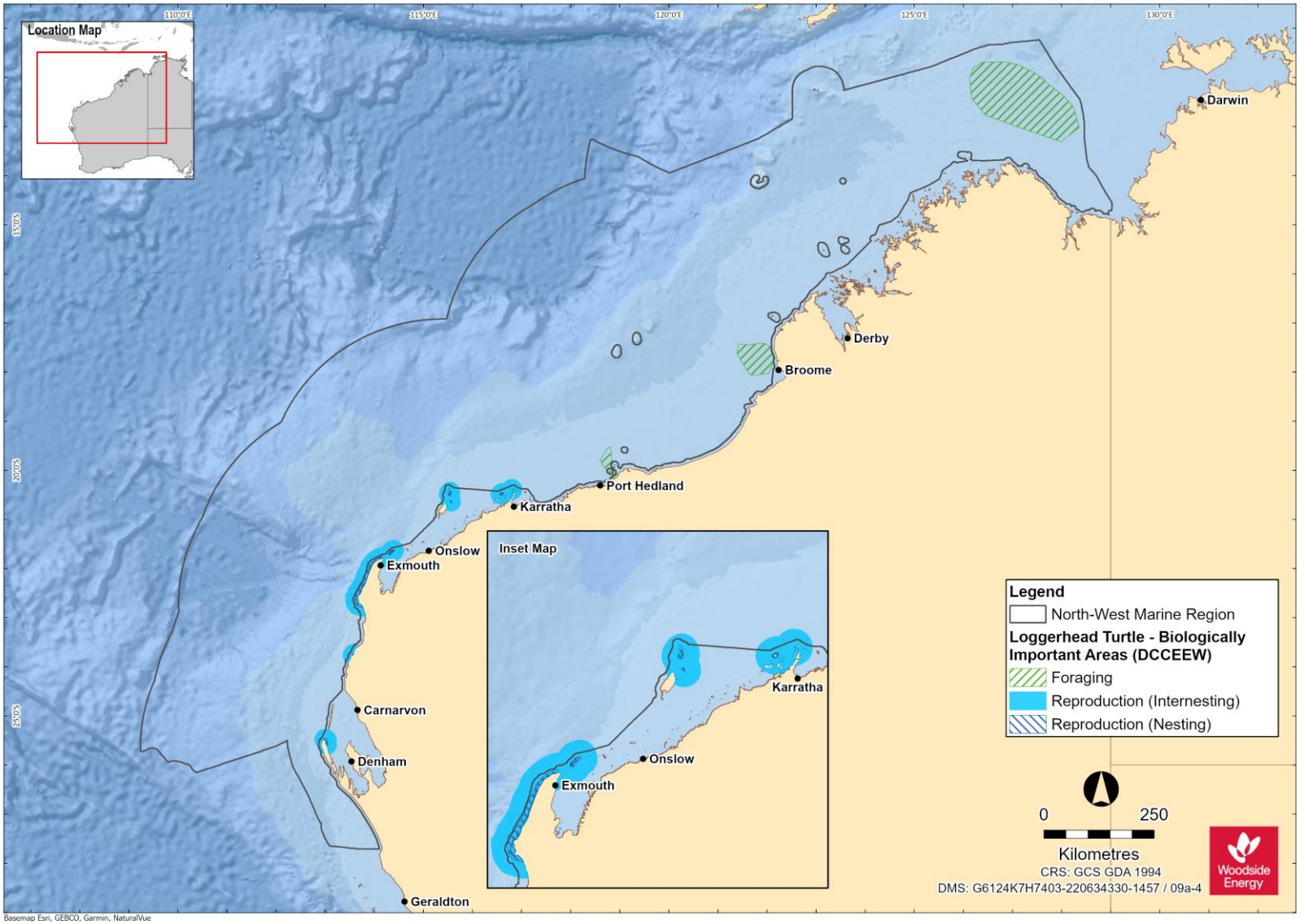


Figure 6-5 Loggerhead turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

6.4 Marine Turtle Summary for NWMR

Six of the seven marine turtle species occur within the Woodside activity areas. Across all three areas, globally significant breeding populations of four marine turtle species; the green, hawksbill, flatback and loggerhead turtle, have been recorded.

However, offshore waters do not represent biologically important habitat for marine turtles in any of the three Woodside activity areas. Isolated records of transient individuals (on post-nesting migration) are expected, but there is no evidence of important habitat or behaviours for marine turtles in the offshore, open water environment of the NWS, in general.

6.4.1 Browse

The proposed Browse activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species:

- the green turtle, including two distinct genetic stocks (Ashmore Reef and Scott Reef-Browse Island); and
- the flatback turtle, Cape Domett genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and flatback turtle are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

Table 6-4 Marine turtle key information for Browse activity area.

Species / Genetic Stock	Key Information
Green Turtle	
Ashmore Reef Stock (G-AR)	The G-AR stock nests in a localised area of the Indian Ocean in the Ashmore Reef and Cartier Island Australian Marine Park (AMP) areas. Population estimates are not available for Ashmore Reef, although annual breeding numbers are thought to be in the low hundreds (Whiting, 2000). Designated habitat critical for the G-AR stock are the nesting locations of Ashmore Reef and Cartier Reef, and an internesting buffer of 20 km radius around these rookeries, year-round with peak internesting activity occurring December to January (refer Table 6 of the Recovery Plan). Juvenile and adult turtles forage within the tidal/sub-tidal habitats of offshore islands and coastal waters with coral reef, mangrove, sand, rocky reefs, and mudflats where there are algal turfs or seagrass meadows present (Commonwealth of Australia, 2017).
Scott Reef-Browse Island Stock (G-ScBr)	The G-ScBr stock is a discrete unit known to nest at only two locations within the North-east Indian Ocean—Sandy Islet and Browse Island. There is currently very limited data available for the G-ScBr stock, therefore population numbers are not known. Designated habitat critical for the G-ScBr stock are the nesting locations of Sandy Islet and Browse Island, and an internesting buffer of 20 km radius around these rookeries, for the period November to March (refer Table 6 of the Recovery Plan). Surveys conducted at Scott Reef in 2006, 2008 and 2009 indicate that the summer months from late November to February are the preferred breeding season for green turtles at Sandy Islet (Guinea, 2009). Satellite tagging studies (Pendoley, 2005; Guinea, 2011) have provided an indication of the behaviour and migratory routes of adult green turtles leaving Scott Reef. Most animals appear to swim through South Reef lagoon and disperse toward the Western Australian mainland via two distinct post-nesting migration pathways; travelling east and north toward the Bonaparte Archipelago and then north along the coast to foraging areas in NT waters or travelling south to Cape Leveque and then south along the coast to the Turtle Islands off the mouth of the De Grey River in the Pilbara region (Ferreira et al., 2021).

Species / Genetic Stock	Key Information
Flatback Turtle	
Cape Domett Stock (F-CD)	Cape Domett is an important high density nesting area (Tucker et al., 2021). Combined with a smaller site at Lacrosse Island, the F-CD stock is one of the largest flatback turtle stocks in Australia. Average nesting abundance at Cape Domett is estimated at 3,250 females per year (Whiting et al., 2008). Designated habitat critical for the F-CD stock are the nesting locations of Cape Domett and Lacrosse Island, and an internesting buffer of 60 km radius around these rookeries, year-round with peak internesting activity occurring July to September. Extending further than the habitat critical internesting buffer, an internesting buffer BIA of 80 km is located at Cape Domett and Lacrosse Island.

6.4.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes major nesting areas that support globally significant breeding populations of three marine turtle species, representing four discreet genetic stocks:

- the green turtle, NWS genetic stock;
- the hawksbill turtle, WA genetic stock; and
- the flatback turtle, South-west Kimberley stock and Pilbara genetic stock.

Locations of habitat critical for each of the four species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green, hawksbill, and flatback turtles are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

Table 6-5 Marine turtle key information for NWS / Scarborough activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the NWS stock within the NWS / Scarborough activity area are located at Lacepede Islands, Montebello Islands, Barrow Island (Tucker *et.al.*, 2021), Bells Beach, Delambre Island, Mundabullangana, Port Hedland, and Thevenard Island. These areas are designated habitat critical for survival of the stock and include an internesting buffer of 20 km radius around these rookeries fromNovember to March.
Hawksbill Turtle	
Western Australia Stock (H-WA)	The H-WA stock is the largest in the Indian Ocean. The majority of the nesting for this stock is located in the Pilbara. The Dampier Archipelago has the largest nesting aggregation recorded. In particular, Rosemary Island supports the most significant hawksbill turtle rookery in the WA region and one of the largest in the Indian Ocean; approximately 500-1000 females nest on the island annually, more than at any other WA rookery (Pendoley, 2005; Pendoley et al., 2016). Major rookeries of the H-WA stock within the NWS / Scarborough activity area are located at Rosemary Island, Delambre Island and the Montebello Islands. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries fromOctober to February.
Flatback Turtle	
South-west Kimberley Stock (F-swKim)	The genetic relationship between this nesting aggregation and the Cape Domett and Pilbara stocks is currently under review. Population numbers of the F-swKim stock are unknown. Major rookeries of the F-swKim stock are located at Eighty Mile Beach and Eco Beach. These areas are designated habitat critical for the stock and include an internesting buffer of 60 km radius around these rookeries from October to March.
Pilbara Stock (F-Pil)	The extent of genetic relatedness of flatback turtles along the WA coast is currently under review. Population numbers of the F-Pil stock are unknown.

Species / Genetic Stock	Key Information
	This stock nests on many islands in the Pilbara and southern Kimberley, with major rookeries at Mundabullangana Beach, Delambre Island, Rosemary Island and Barrow Island. These areas are designated habitat critical for the F-Pil stock and include an internesting buffer of 60 km radius around these rookeries fromOctober to March. A study using aerial photogrammetry showed nesting beaches were spread across the Pilbara from Y Island (Exmouth Gulf) in the southwest, to Bedout Island in the north and Mulla Mulla Downs Creek in the east (Fossete et al., 2021b). Other large flatback rookeries include Legendre Island and Thevenard Island. The Dampier Archipelago has been identified as a high-use area for flatback nesting (i.e., > 50% of the stock) (Fossete et al., 2021b). Extending further than the habitat critical internesting buffer, a year-round internesting buffer BIA of 80 km is located north and north-west of the Montebello Islands. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical internesting buffer is the legally recognised area of protection under the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. Post-nesting satellite tracking indicates foraging occurs along the WA coast in water shallower than 130 m and within 315 km of shore (Commonwealth of Australia, 2017). Flatbacks exhibit high fidelity to nesting beaches during periods of nesting attempts (Peel et al., 2024).

6.4.3 North-west Cape

The North-west Cape activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species, representing two discreet genetic stocks:

- the green turtle, NWS genetic stock; and
- the loggerhead turtle, Western Australia genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and loggerhead turtles are outlined in **Table 6-3** and **Figure 6-3** Green turtle BIAs within the NWMR (data source: DCCEEW, 2024b)

Figure -.

A 2018 survey, including on-beach monitoring of the Muiron Islands and Ningaloo Coast from North-west Cape to Bungelup (Rob et al., 2019), supports the concept that North-west Cape and the Muiron Islands are major important nesting areas for green and loggerhead turtles, as identified in the Recovery Plan (Commonwealth of Australia, 2017).

Table 6-6 Marine turtle key information for North-west Cape activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). There is one major rookery of the G-NWS stock located within the North-west Cape activity area. Located on the mainland coast of the North-west Cape, this area is designated habitat critical for the stock and includes an internesting buffer of 20 km radius around the rookery from November to March. For the 2022-23 Ningaloo Turtle Program season, green turtles were the most active species in the NW Cape division, with 91.2% of total turtle activity (DBCA, 2023a). The number of green turtle nests has varied largely among years since commencement of the program in 2002 (range of 1.06 to 18.13 nests per subsection per day) with an average of 5.69. The average number of green turtle nests in the 2022-23 peak season were below average, with 4.07 nests per subsection per day (DBCA, 2023a). There have been two clear peaks (2011-12 and 2020-21) in activity since the beginning of the Ningaloo Turtle Program, where activity has been approximately 2.5 to 11 times greater than other seasons (DBCA, 2023a). Both seasons coincided with La Niña weather patterns (DBCA, 2021a).
Loggerhead Turtle	
Western Australia Stock (LH-WA)	The LH-WA stock is one of the largest in the world (Limpus, 2009). The trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the LH-WA stock are located at Dirk Hartog Island, Muiron Islands and Gnaraloo Bay. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries fromNovember to May. Dirk Hartog Island in the Shark Bay Marine Park, with an average of 122 nests per day over 2.1 km (Reinhold and Whiting, 2014), is recognised as the most important loggerhead turtle rookery in WA (Commonwealth of Australia, 2016; as cited in Rob et al., 2019). The standardised level of loggerhead turtle nesting along the North-west Cape was above the long-term average (0.36) for the 2022-23 season and the third highest since the Ningaloo Turtle Program began (2002), with 0.46 nests per subsection per day (DBCA, 2021a).

6.5 Sea Snakes

Sea snakes are commonly found in the NWMR and NMR, but less so in the SWMR, and occupy three broad habitat types: shallow water coral reef and seagrass habitats, deepwater soft bottom habitats away from reefs, and surface water pelagic habitats (Guinea, 2007a).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer et al., 2016), of which four are endemic to reef habitats in the remote parts of the region:

- dusky sea snake (*Aipysurus fuscus*);
- large headed sea snake (*Hydrophis pacificus*);
- short-nosed sea snake (*Aipysurus apraefrontalis*); and
- leaf-scaled sea snake (*Aipysurus foliosquama*).

The short-nosed sea snake and the leaf-scaled sea snake are listed threatened species (Critically Endangered) under the EPBC Act and the dusky sea snake is currently under assessment for inclusion on the EPBC Act threatened species list as Endangered (**Table 6-7**).

The Kimberley coast has the world's highest diversity of sea snakes, supporting over one third of all known species (Somaweera and Saunders, 2015). There is currently limited knowledge about the ranges and distribution patterns of sea snake species in the NWMR, in addition to a lack of understanding of population status and threats. Recent findings of *A. apraefrontalis* and *A. foliosquama* in locations outside of their previously defined ranges have highlighted the lack of information on species distributions in the NWMR (Udyawer et al., 2016). Udyawer et al. (2020) used a correlative modelling approach to understand habitat associations and identify suitable habitats for five sea snake species (*A. apraefrontalis, A. foliosquama, A. fuscus, A. l. pooleorum* and *A. tenuis*). Species-specific habitat suitability was modelled across 804,244 km^2 of coastal waters along the NWS, and the resulting habitat suitability maps enabled the identification of key locations of suitable habitat for these five species (refer **Table 6-6**).

No habitat critical to survival or BIAs for sea snake species have been identified in the NWMR. While the Ashmore Reef and Cartier Island AMPs have been recognised for their high diversity and density of sea snakes (DSEWPAC, 2012a), surveys have revealed a steep decline in sea snake numbers at Ashmore Reef (Guinea, 2007b; Lukoschek et al., 2013). Leaf-scaled and short-nosed sea snakes have been absent from surveys at Ashmore Reef since 2001, despite an increase in survey intensity (Guinea, 2006, 2007b; Guinea and Whiting, 2005; Lukoschek et al., 2013). The reason for the decline is unknown.

Table 6-7 Information on the two threatened sea snake species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Short-nosed sea snake	Preferred habitat: Primarily on reef flats or in shallow waters of outer reef edges to depths of 10 m (Minton et al., 1975). Typically, movement is restricted to within 50 m of reef flat habitat (Guinea and Whiting, 2005). Diet: Primarily fishes and eels.	The short-nosed sea snake has been recorded from Exmouth Gulf to the reefs of the Sahul Shelf, although most records come from Ashmore and Hibernia reefs (Guinea and Whiting, 2005). Key locations of suitable habitat: Ashmore Reef, Exmouth Gulf and coral habitat fringing the Muiron Islands and the Montebello Islands (Udyawer et al., 2020).
Leaf-scaled sea snake	Preferred habitat: The leaf-scaled sea snake occurs in shallow protected areas of reef flats, typically in water depth less than 10 m. Diet: Primarily shallow water coral-associated wrasse, gudgeons, clinids and eels (McCosker, 1975; Voris, 1972; Voris and Voris, 1983).	The leaf-scaled sea snake has only been recorded at Ashmore and Hibernia reefs (Guinea and Whiting, 2005), indicating it has a very limited distribution. Key locations of suitable habitat: Ashmore Reef, Shark Bay, Exmouth Gulf, Barrow Island and Montebello Islands (Udyawer et al., 2020).

6.6 Crocodiles

The salt-water crocodile (*Crocodylus porosus*) is a listed migratory species under the EPBC Act known to occur within the NWMR. The species is found in most major river systems of the Kimberley, including the Ord, Patrick, Forrest, Durack, King, Pentecost, Prince Regent, Lawley, Mitchell, Hunter, Roe and Glenelg rivers. The largest populations occur in the rivers draining into the Cambridge Gulf and the Prince Regent River and Roe River systems. There have also been isolated records in rivers of the Pilbara region, around Derby near Broome and as far south as Carnarvon on the mid-west coast. No BIAs for salt-water crocodile have been identified in the NWMR.

6.7 Water Monitor

Mitchell's water monitor (*Varanus mitchelli*) is listed as critically endangered under the EPBC Act. The species is known to occur in wetlands and coastal floodplains in the northern extent of the NWMR, with distribution from Yampi Sound Training Area, across the Kimberley and into the Top End of the Northern Territory and far northwest Queensland (DCCEEW, 2023c). The species inhabits freshwater and saline wetlands that range from seasonal gorges in upper catchments to large rivers and coastal floodplains. It has been recorded in rivers, creeks, riffle zones, gorges, springs, lagoons, swamps, mangroves, and foreshores (DCCEEW, 2023c).

Habitat critical to the survival of the species has not been mapped however includes all areas where the species persists following the establishment of cane toads and areas within known distribution where habitat occurs or can be restored (terrestrial) (DCCEEW, 2023c). No BIAs for Mitchell's water monitor have been identified in the NWMR.

7. MARINE MAMMALS

7.1 Regional Context

The offshore waters of WA include important habitat for marine mammals, including areas that support key life stages such as breeding, calving, foraging, and migration. Of the 45 species of cetacean occurring in Australian waters, 27 species occur regularly in the waters of the NWMR, nine species in the waters of the NMR and 33 species in the SWMR. The waters of the NWMR and the NMR support globally significant dugong populations (DSEWPAC, 2012a, 2012c).

The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters of the NWMR for several cetacean species (DSEWPAC, 2012a). Numerous large mysticetes (baleen whale) species, in particular the humpback whale, are known to utilise the region for migration and calving, and the pygmy blue whale is known to utilise the region for foraging and as a migration pathway between southern feeding and northern breeding/feeding areas north of the equator.

The SWMR is an important area for numerous marine mammal species including pinniped species, large, migratory whale species and resident coastal whale and dolphin species (DSEWPAC, 2012b).

The NMR and adjacent areas are important for several species of cetacean, particularly inshore dolphin species. These species, and other marine mammals, rely on the waters of the NMR and adjacent coastal areas for breeding and foraging (DSEWPAC, 2012c).

Table 7-1 outlines the threatened and migratory marine mammal species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 7-1 Marine mammal species identified by the EPBC Act PMST that may occur within the NWMR.

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[12]	IUCN Red List of Threatened Species (non-statutory)[13]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Cetaceans - Mysticeti							
Balaenoptera musculus	Blue whale	Endangered	Migratory	Cetacean	Endangered	Endangered	Conservation Management Plan for the Blue Whale - A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015-2025 (Commonwealth of Australia, 2015a)
Eubalaena australis	Southern right whale	Endangered	Migratory	Cetacean	Vulnerable	Least Concern	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW, 2024a)
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Endangered	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Cetacean	Conservation dependent	Least Concern	Listing Advice *Megaptera novaeangliae* Humpback Whale (DAWE, 2022)
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Cetacean	Endangered	Vulnerable	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Cetacean	Migratory	Least Concern	N/A
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Cetacean	Migratory	Near Threatened	N/A
Balaenoptera omurai	Omura's whale	N/A	N/A	Cetacean	N/A	Data Deficient	N/A
Cetaceans - Odontoceti							
Physeter macrocephalus	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	Vulnerable	N/A
Orcinus orca	Killer whale	N/A	Migratory	Cetacean	Migratory	Data Deficient	N/A

[12] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)

[13] IUCN. 2024. The IUCN Red List of Threatened Species. Version 2024-1. https://www.iucnredlist.org (accessed on 13/08/2024)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[12]	IUCN Red List of Threatened Species (non-statutory)[13]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Orcaella heinsohni	Australian snubfin dolphin	N/A	Migratory	Cetacean	Priority	Vulnerable	N/A
Sousa chinensis	Indo-Pacific humpback dolphin (Australian humpback dolphin)	N/A	Migratory	Cetacean	Priority	Vulnerable	N/A
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/ Timor Sea populations)	N/A	Migratory	Cetacean	N/A	N/A	N/A
Sirenians and Pinnipeds							
Dugong dugon	Dugong	N/A	Migratory	Marine	Migratory	Vulnerable	N/A
Neophoca cinerea	Australian sea lion	Endangered	N/A	Marine	Endangered	Endangered	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPAC, 2013a) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)

7.2 Cetaceans in the NWMR

Cetaceans are generally widely distributed and highly mobile. In general, distribution patterns reflect seasonal feeding and breeding areas, characterised by high productivity, and migration routes associated with reproductive patterns. The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters for several cetacean species (DSEWPAC, 2012a).

From the Protected Matters search, 34 EPBC Act listed species were recorded as potentially occurring or having habitat within the NWMR (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). Of those, 12 cetacean species are listed as threatened and/or migratory, including baleen whales, toothed whales and dolphins that occur within the NWMR (**Table 7-2**).

7.3 Dugongs in the NWMR

The dugong is listed as migratory under the EPBC Act. Dugongs inhabit seagrass meadows in coastal waters, estuarine creeks and streams, and reef systems (DSEWPAC, 2012a).

Some of the coastal waters adjacent to the NWMR support significant populations of dugongs, including Shark Bay, Exmouth Gulf, in and adjacent to Ningaloo Reef, in coastal waters along the Kimberley coast, and on the edge of the continental shelf at Ashmore Reef (DEWHA, 2008).

Although the patterns of dugong movement in WA are not well understood, it is thought that dugongs move in response to availability of seagrass (Marsh et al., 1994; Preen et al., 1997) and water temperature. Cleguer and Marsh (2023) present the most contemporary data on dugongs and population estimates via an inventory of dugong aerial surveys of Australia, including northwest Australia (Shark Bay, Ningaloo, Exmouth Gulf and Pilbara, the Kimberley Region).

There are a number of BIAs for dugong within and adjacent to waters of the NWMR (refer **Section 7.5**).

7.4 Pinnipeds in the NWMR

The Australian sea lion is listed as a species that may occur or may have habitat within the NWMR (Protected Matters search - **APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). It is included here as the Australian sea lion is the only pinniped endemic to Australia (Strahan, 1983) and has been recorded within the southern extent of the NWMR at Shark Bay, WA (Kirkwood et al., 1992). The most northern known breeding colony is at the Houtman Abrolhos Islands in the SWMR. The Australian sea lion's breeding range extends from the Houtman Abrolhos Islands, WA to The Pages Island, east of Kangaroo Island, SA. The Australian sea lion was listed as endangered in 2020 (Threatened Species Scientific Committee, 2020a). An assessment of the status and trends in abundance of this endemic, coastal pinniped species (Goldsworthy et al. 2021) documented an overall reduction in pup abundance over three generations, providing strong evidence that the species meets IUCN endangered criteria.

There are no BIAs for the Australian sea lion in the NWMR.

7.5 Marine Mammals in the NWMR

Marine mammal descriptions within the NWMR including baleen whales, toothed whales and dolphins and dugongs are presented in **Table 7-2**.

Table 7-2 Information on the threatened/migratory marine mammal species within the NWMR

Species	Key Information
Baleen whales (Mysticeti) – Low Frequency hearing	
Humpback whale	In Australian waters, there are two genetically distinct populations of humpback whales that migrate annually along the west (Group IV/ Group D) and east (Group V) coasts between May and November (Jenner et al., 2001), The population of humpback whales (*Megaptera novaeangliae*) known as Group IV/D migrate annually from Antarctic feeding grounds passing along the coast of Western Australia to warm tropical waters including the Kimberley, North West Cape, and Exmouth Gulf for breeding and calving (Russell et al*.,* 2024). The biannual migration of humpback whales through the NWMR occurs in winter (June to August) for northbound migrating whales and southbound in early spring (September to November). Population data for the West Australian sub-population is considerably variable (DAWE, 2022). The population has been increasing in size at a rate of approximately 10% per annum since the cessation of whaling in Western Australian waters by 1963 (Thums et al., 2018) and population numbers have increased from approximately 2,000 to 3,000 individuals in 1991 to between 19,200–33,850 individuals in 2008 (Bannister and Hedley, 2001; Bejder et al., 2019; Hedley et al., 2011). Aerial surveys off the WA coast undertaken between 2000 and 2008 produced a population estimate for the Group IV population of 26,100 individuals (Salgado Kent et al., 2012) and the predicted increasing trend in abundance predicted by modelling (Thums et al., 2018). The International Whaling Commission (IWC) estimated that in 2012 the Western Australian subpopulation had recovered to 90% (74-98% 90% PI) of its pre-whaling levels and projected that by 2020 it would have reached 98% (88-100% PI) (IWC 2015 cited in (DAWE, 2022)). Due to the unprecedented population recovery the humpback whale was removed from the EPBC Act threatened species list as it was deemed no longer eligible for inclusion (DAWE, 2022) after a previous listing as Vulnerable for many decades. The Group IV population migrates northward from their Antarctic feeding grounds around May each year, reaching the NWMR around early June. The southward migration subsequently starts in mid-September, after time for breeding and calving (typically within August and September) (Threatened Species Scientific Committee, 2015b). Within the NWMR there are key calving areas between Broome and the northern end of Camden Sound, and resting areas in the southern Kimberley region, Exmouth Gulf and Shark Bay. In particular, high numbers of humpback whales are observed in Camden Sound and Pender Bay from June to September each year (Threatened Species Scientific Committee, 2015b) and as far south as Gourdon Bay in the Kimberley (Thums et al., 2018). There are reports of neonates present further south, suggesting that the calving areas may be poorly defined, expanding or returning to pre-whaling patterns as the population recovers. Aerial photogrammetric surveys in 2013 and 2015 recorded large numbers of humpback whale calves along the North-west Cape, with estimated minimum relative calf abundance of 463–603 in 2013 and 557–725 in 2015 (Irvine et al*.*, 2018). The majority of calves sighted in both years (85% in 2013; 94% in 2015) were neonates, and these observations indicate that a minimum of approximately 20% of the expected number of calves of this population are born near, or south of the North-west Cape. Thus, the calving grounds for the Group IV population extend south from Camden Sound to at least North-west Cape, 1000 km South-west of the currently recognized calving area (Irvine et al*.*, 2018) and further south, as reported for Geographe Bay and Flinders Bay (in July and August) in south-west, Western Australia (Jolliffe et al. 2024). The seasonal presence of humpback whales is presented in **Table 9-1**. Migration, breeding and calving BIAs for the humpback whale within the NWMR are presented in **Table 7-3**and **Figure 7-2**.
Blue whale	There are two recognised sub-species of blue whale in the Southern Hemisphere, both of which are recorded in Australian waters. These are the southern (or 'true') blue whale (*Balaenoptera musculus*) and the 'pygmy' blue whale (*Balaenoptera musculus brevicauda*) (Commonwealth of Australia, 2015a). In general, southern blue whales occur in waters south of 60°S and pygmy blue whales occur in waters north of 55°S (i.e, not in the Antarctic). On this basis, it is reasonably assumed all blue whales sighted in the NWMR are likely to be pygmy blue whales. The migratory population, known as the East Indian Ocean (EIO) pygmy blue whale population, migrate biannually through the NWMR. This population is seasonally distributed from Indonesia (a potential breeding ground) to south-west of Australia and east across the Great Australian Bight and Bonney Upwelling to beyond the Bass Strait (Blue Planet Marine, 2020 and McCauley et al*.* (2018)). Migration seems to be variable, with some individuals appearing as resident to areas of high productivity and others undertaking migrations across long distances (Commonwealth of Australia, 2015a). McCauley et al*.* (2018) describe three migratory stages around Australia for the EIO pygmy blue whale population, based on collated passive acoustic

Species	Key Information
	data: a 'southbound migratory stage' where whales travel southwards from Indonesian waters offshore from the WA coastline, mostly from October to December but possibly into January of the following year; a protracted 'southern Australian stage' (January to June) where animals spread across southern waters of the Indian Ocean and south of Australia (with movement as far south as the Southern Subtropical Convergence Zone); and a 'northbound migratory stage' (April to August) where animals travel north back to Indonesia again. Extensive passive acoustic monitoring throughout the NWMR indicates migratory timing and distribution of pygmy blue whales (noting this survey method detects vocalising whales): • Acoustic monitoring conducted by McCauley and Jenner (2010) in the Exmouth and northern Montebello Islands region identified a peak period in the northern migration of pygmy blue whales from April to August, and from November through to late December during the southern migration. • Northbound migration between mid-April and early August and southbound migration between October to December and possibly into January for the Scott Reef area 2006-2009 (McCauley 2011) (noting the absence of any southbound detection in 2007). • Noise loggers deployed for a full year period in 2019 detected pygmy blue whales on their northern and southern migration. The noise loggers were located at various locations ~40–50 km west of the project area, and in ~ 1300 m water depth. The majority of pygmy blue whales detected on their northern migration occurred from mid-April to the end July, then again on their southern migration in November through to early-December (Chevron Australia, 2019) • Gavrilov et al. (2018) analysed acoustic data from an array of ocean bottom seismographs (recorded in December 2014) to detect pygmy blue whales and showed the southbound migration was over an extended offshore corridor traversing an area up to 400 km to the northwest of the North-west Cape. • A targeted passive acoustic monitoring program to detect southbound migratory pygmy blue whales ran from late October 2021 to March 2022 with a deepwater ALTO lander (900 m depth) to the west of the Montebello Trough and C-lander (190 m depth) at the outer edge of the NWS (Warren et al. 2023). Despite vessel noise dominating low frequencies throughout the recording periods at both recording locations, pygmy blue whale song vocalisations and D-calls were detected from the start of the recording period through November and early December 2021. • An offshore trial of Distributed Acoustic Sensing (DAS) using fibre optic cables (submarine telecommunications cable) to detect low-frequency whales recorded vocalising pygmy blue whales within 12 km detection range within a 50 km long area on the outer edge of NWS (Debens et al. 2024). Pygmy blue whale detections were made from mid-November (commencement of the trial) through to mid-December 2023 and a couple of detections in early January 2024. The first satellite tracks of pygmy blue whales for this population documented northbound migration between Western Australia and Indonesia (Double et al. 2014) and identified areas where whales had highest occupancy, such as Perth Canyon, Naturalist Plateau, North-west Cape region and the Banda Sea. Pygmy blue whales tagged in the Bonney Upwelling region of South Australia in 2015 showed that most of the tagged whales remained in South Australian waters during the tracking period but one documented the migration to Indonesia via Western Australian waters and a return journey (albeit via intermittent data) of the southbound migration to the southern coast of Western Australia (Möller et al., 2020). Thums et.al. (2022) used passive acoustic monitoring and satellite telemetry data (a combination of existing data and tag tracking data collected for Western Australia 2019-2022) to assess the spatial extent of the distribution, migration and foraging areas for pygmy blue whales in the South-east Indian Ocean associated with the northbound migrationThe tag tracking results highlighted extensive use of slope habitat off Western Australia and minimal use of shelf habitat by pygmy blue whales. Additionally, pygmy blue whales off Western Australia were mostly engaged in migration, with short periods of foraging. Whale density was highest in the southern part of the North-west Australian coast and whales were there between April-June, and November-December. This study also compared foraging and migration areas to described areas of importance (BIAs), some aligned such as migratory BIA for northbound pygmy blue whales whilst some had less than 10% overlap (Thums et al*.,* 2022). The timing, distribution and behaviour of southbound pygmy blue whales is less well documented with reference to satellite tagging. Limited tagged whale data from Double et al. (2014), Möller et al. (2020) and Thums et al. (2022) indicated connectivity of migrating pygmy blue whales from South Australia through Western Australia to and back from Indonesia. Mustika et al. (2024), satellite tag tracking data for two southbound pygmy blue whales (tagged in Indonesia) suggest varying migratory

Species	Key Information
	pathways from the Savu Sea to subantarctic waters as well as extended time in the Southern Subtropical Convergence Zone. One tagged whale traversed a migratory path through offshore waters of Western Australia towards Heard and McDonalds Islands covering a distance of almost 6,000 km and travelling at 100 km per day. In contrast a second tagged whale took a migratory journey similar to the documented northbound route to the North-west Cape before heading out into offshore waters and spending time in the Subantarctic Front before looping back up through the Perth Canyon, North-west Cape and towards Savu Sea (Mustika et al., 2024). There is currently insufficient data to accurately estimate population numbers of the pygmy blue whale in Australian waters (Blue Planet Marine, 2020; Commonwealth of Australia, 2015a). There are, however, two estimates of population size of the EIO pygmy blue whale for WA. McCauley and Jenner (2010) calculated the population to be between 662 and 1559 individuals in 2004 based on passive acoustics (whale vocalisations), and Jenner et al. (2008) (based on photographic mark and recapture) calculated between 712 and 1754 individuals, but both estimates did not account for animals travelling further west into the Indian Ocean (McCauley et al., 2018). More recent passive acoustic data estimates a 4.3% growth rate that applies to the proportion of EIO pygmy blue whales seasonally present in offshore water off south-eastern Australia and may not reflect the full population but does imply an increasing population (McCauley et al., 2018). Thums et al., (2022) identified the most important foraging (and/ or resting/ breeding) areas from south to north as: (1) the Perth Canyon and vicinity; (2) the shelf edge off Geraldton; (3) the shelf edge from Ningaloo Reef to the Rowley Shoals (not continuous) and including a couple of small areas near the shelf edge off approx. 25ºS; and (4) the Banda Sea. The Foraging BIA off the South-west of Western Australia encompassed 83% of the most important areas in that region (Thums et al., 2022). The pygmy blue whale is typically present in the Perth Canyon from November to June, with an observed peak between March and May (Commonwealth of Australia, 2015a; Blue Planet Marine, 2020). The pygmy blue whale feeds in the Perth Canyon at depths of 200 to 300 m, which overlaps the typical distribution of krill (200–500 m water depth (day) to surface (night)) (McCauley et al., 2004; Commonwealth of Australia, 2015a). Other possible feeding grounds off the WA coast include the wider area around the Perth Canyon, and possible foraging areas off the Ningaloo Coast and at Scott Reef (Commonwealth of Australia, 2015a). The seasonal presence of pygmy blue whales is presented in **Table 9-1.** Refer **Table 7-3** and **Figure 7-4** for the location and type of BIAs for blue whales in the NWMR. There is a migratory BIA for the pygmy blue whale within WA waters, which extends for most of the length of the NWMR within offshore waters.
Bryde's whale	The Bryde's whale is the least migratory of its genus and is restricted geographically from the equator to approximately 40°N and S, or the 20° isotherm (Bannister et al., 1996). The species is known to exhibit inshore and offshore forms varying in morphology and migratory behaviours in other international locations (Bannister et al., 1996). This appears to also be the case within Australian waters. Bryde's whales have been identified as occurring in both oceanic and inshore waters, with the only key localities recognised in WA being in the Houtman Abrolhos Islands and north of Shark Bay (Bannister et al., 1996). Data suggests offshore whales migrate seasonally, heading towards warmer tropical waters during the winter; however, information about migration within the NWMR is not well known (McCauley and Duncan, 2011). McCauley (2011b) detected Bryde's whales using acoustic loggers deployed in and around Scott Reef from 2006 to 2009. Other acoustic logger data of Bryde's whale vocalisations recorded between Ningaloo and north of Darwin showed no apparent trends or seasonality (McCauley, 2011a). There are no identified BIAs for this species in the NWMR.
Southern right whale	The southern right whale occurs primarily in waters between about 20°S and 60°S and moves from high latitude feeding grounds in summer to warmer, low latitude, coastal locations in winter (Bannister et al., 1996). Two populations of southern right whale occur in Australian waters: the western and eastern (DCCEEW, 2024a). Southern right whales in Australian waters predominantly occur in aggregations in coastal water reproductive areas where they calve and nurse their young from May to October, primarily occupying shallow waters (< 10m depth) within 1 km of the coastline (Charlton et al., 2019 and Smith et al., 2022; cited in DCCEEW, 2024a). Peak period of abundance is late July to August, with seasonal variability. Females accompanied by a calf generally occupy the calving ground for 2 to 3 months between June and September (DCCEEW, 2024a). For the western population, breeding occurs in Exmouth Gulf and in calving areas along the south coast of WA outside of the NWMR (DCCEEW, 2023). A stranding record exists for the far north Kimberley coast (ALA, 2006). Known females have rarely been observed on the Australian coastline in the year prior to

Species	Key Information
	calving, suggesting mating and conception may predominantly occur away from calving grounds, potentially on feeding grounds (Watson et al., 2021 cited in DCCEEW, 2024a). There is a significant energetic cost to the mother in the late stages of gestation (i.e. last trimester) and calf growth rate has been found to be dependent on the maternal body size and condition of the mother (Christiansen et al. 2018 and Christiansen et al. 2022 cited in DCCEEW, 2024a). Foraging ecology of southern right whales is poorly understood and observations of foraging whales are rare (DCCEEW, 2024a). There is evidence of a population increase of the western population, whereas there is greater uncertainty of the population status and trends of the eastern population (DCCEEW, 2024a). Southern right whale abundance in Australian waters is still far below estimated historic abundance (>20%) (DCCEEW, 2024a). There is a reproduction BIA and habitat critical to survival (HCTS) for the southern right whale located within Exmouth Gulf (DCCEEW, 2024a). A migration BIA extends 3 nautical miles out from the coastline from Ningaloo and spans down the Western Australian coastline and across the south and south-east coast of Australia (DCCEEW, 2024a). Nursing and calving behaviours are known to occur within reproductive BIAs. HCTS for the southern right whale has been identified as all reproductive BIAs across the species range (DCCEEW, 2024a). Refer Figure 7-1 and **Section 7.6** for HCTS for southern right whale in the NWMR. Refer to **Table 7-3** and **Figure 7-5** for BIAs for southern right whales in the NWMR
Antarctic minke whale	The Antarctic minke whale have a circumpolar distribution south of 60°S during summer (Risch et al., 2019) and has been recorded off all Australian States (apart from the NT) in winter (refer to DCCEWE SPRAT profile). Their seasonal distribution and migration patterns are poorly understood (Risch et al., 2019). The species is highly associated with sea ice and feeds in cold Antarctic waters over the summer. It is thought that the Antarctic minke whale migrates through offshore waters of Western Australia to about 20°S to feed and possibly breed (Bannister et al., 1996). Information about timing and distribution, behaviour (migration and breeding) within the NWMR, however, is presently not known. In the high latitudinal winter breeding grounds in other regions, the species appears to be distributed off the continental shelf edge. No population estimates are available for Antarctic minke whales in Australian waters. Acoustic detection has been recorded for the Perth Canyon and Exmouth Plateau (McCauley, 2011) and more recently acoustic detection indicated presence in offshore waters of NWS in late October and all of November and was absent (based on no vocalisation and detection) in December 2021 to March 2022 (over a monitoring period from October 2021 to March 2022) (Warren et al., 2023)). There are no identified BIAs for this species in the NWMR.
Sei whale	The sei whale is a baleen whale with a worldwide oceanic distribution and is expected to seasonally migrate between low latitude wintering areas and high latitude summer feeding grounds (Bannister et al., 1996; Prieto et al., 2012). There are no known mating or calving areas in Australian waters. The species has a preference for deep waters, typically occurs in oceanic basins and continental slopes (Prieto et al., 2012), and exhibits a migration pathway influenced by seasonal feeding and breeding patterns. Sei whales have been infrequently recorded in Australian waters (Bannister et al., 1996). Reliable estimates of the sei whale population size in Australian waters are currently not possible due to a lack of dedicated surveys and their elusive characteristics. Similarly, the extent of occurrence and area of occupancy of sei whales in Australian waters cannot be calculated due to the rarity of sighting records. They will typically travel in small pods of three to five individuals, with some segregation by age, sex and reproductive status. Calving grounds are presumed to exist in low latitudes with mating and calving potentially occurring during winter months (Threatened Species Scientific Committee, 2015a). There are no known mating or calving areas in Australian waters, and there are no identified BIAs for this species in the NWMR.
Fin whale	The fin whale is a large baleen whale distributed worldwide. Fin whales migrate annually between high latitude summer feeding grounds and lower latitude over-wintering areas (Bannister et al., 1996) and follow oceanic migration paths. The species is uncommonly encountered in coastal or continental shelf waters. Australian Antarctic waters are important feeding grounds for fin whales but there are no known mating or calving areas in Australian waters (Morrice et al., 2004). The species has been observed in groups of six to 10 individuals, as well as in pairs and alone (Threatened Species Scientific Committee, 2015c). Accurate distribution patterns are not known within Australian waters and the majority of data is from stranding events. Fin whales have been recorded vocalising off the Perth Canyon, WA, between January and April 2000 (McCauley et al., 2000). It is currently not possible to accurately estimate the population size of fin whales in Australian waters predominantly due to the species' behaviour and local ecology, as

Species	Key Information
	the proportion of time they spend at the surface varies greatly depending on these factors. In addition, natural fluctuations of fin whales in Australian waters are unknown; however, long-range movements do appear to be prey-related (Aulich et al., 2022). A recent study by Aulich et al. (2022) used passive acoustic monitoring as a tool to identify the migratory movements of fin whales in Australian waters. On the west coast, the earliest arrival of these animals from Antarctica occurred at Cape Leeuwin in April, and between May and October they migrated along the WA coastline to the Perth Canyon, which likely acts as a feeding zone for migratory whales (Aulich et al., 2022). Some whales were found to continue migrating northwards along the WA coastline with vocalisation presence recorded as far north as Dampier between August and late October (Aulich et al., 2022). There are no identified BIAs for this species in the NWMR.
Omura's whale	Omura's whale is a species of baleen whale that was first described in 2003. Previously specimens of Omura's whale were identified as pygmy/dwarf Bryde's whales, however morphological and molecular evidence identified Omura's whale as a distinct species not closely related to Bryde's whale in 2003 (Ottewell et al., 2016). It was believed that the range of Omura's whale was restricted to the eastern Indo-Pacific, however recent discoveries suggest the species may have a more widespread distribution (Ottewell et al., 2016; Cerchio et al, 2019). In Australia, presence of this species was confirmed in 2015 when, what was later determined to be an Omura's whale, was stranded on the northwest coast of Australia, near Exmouth (Ottewell et al., 2016). An in-depth review conducted by Cerchio et al. (2019) concluded that Omura's whale can primarily be found in tropical and warm-temperate waters and is currently known from all ocean basins excluding the central and eastern Pacific. Further, a strong tendency toward a coastal and neritic water distribution was found, although there were several pelagic water records, the majority of which were on the continental shelf and within shallow seas throughout the documented range (Cerchio et al, 2019). Omura's whales were detected by passive acoustic monitoring: • Warren et al. (2023) targeted passive acoustic monitoring program to detect southbound migratory pygmy blue whales ran from late October 2021 to March 2022 with a deepwater ALTO lander (900 m depth) to the west of the Montebello Trough and C-lander (190 m depth) at the outer edge of the NWS. Calls of the Omura's whales were detected at both recording locations throughout the recording period. Detections were, however, more common at the deeper water location, in terms of both number of detection days and number of detection hours per day (Warren et al., 2023). The shelf edge location showed Omura's present primary in December, however this lander malfunctioned and stopped recording in mid-January 2022. • An offshore trial of Distributed Acoustic Sensing (DAS) using fibre optic cables (submarine telecommunications cable) to detect low-frequency whales recorded vocalising Omura's whales within 12 km detection range along a 50 km long area on the outer edge of NWS (Debens et al. 2024). Omura's whale detections were made from at the beginning of December 2023 through to mid-January 2024 (and the end of the trial). Currently little is known about the ecology and lifestyle characteristics of Omura's whale resulting in an IUCN listing of Data Deficient. There are no identified BIAs for this species in the NWMR.
Toothed whales (Odontoceti) – High Frequency hearing	
Sperm whale	Sperm whales are the largest of the toothed whales and are distributed worldwide in deep waters (greater than 200 m) off continental shelves and sometimes near shelf edges (Bannister et al., 1996). The species tends to inhabit offshore areas at depths of 600 m or more and is uncommon in waters less than 300 m deep (Ceccarelli et al., 2011). There is limited information about sperm whale distribution in Australian waters, however, they are usually found in deep offshore waters, with more dense populations close to continental shelves and canyons. In the open ocean, there is a generalised movement of sperm whales southwards in summer, and corresponding movement northwards in winter, particularly for males. Detailed information about the distribution and migration patterns of sperm whales off the WA coast is not available. Females with young may reside within the NWMR all year round, males may migrate through the region and the species may be associated with canyon habitats (Ceccarelli et al., 2011). Sperm whales have been recorded in deep waters off North-west Cape and appear to occasionally venture into shallower waters in other areas. 23 sightings of sperm whales (variable pod sizes, ranging from one to six animals) were recorded by marine mammal observers (MMOs) during the North-west Cape MC3D marine seismic survey (December 2016 to April 2017) (Woodside, 2020). These animals were observed in deep, continental slope

Species	Key Information
	waters of the Montebello Saddle (maximum distance of approximately 90 km from North-west Cape), and the waters overlying the Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF. The deep waters above the gully/saddle on the inner edge of the plateau (the Montebello Saddle) are thought to be important for sperm whales that may feed in the region (based on 19th Century whaling records; Townsend, 1935). Recent studies such as acoustic detection indicated sperm whale presence in deep, offshore waters but not at the edge of the NWS (over a monitoring period of October 2021 to March 2022, for the deepwater location). However, while sperm whales were detected every month, occurring in bouts, there was no evidence for lasting use of the area around this recording location (Warren et al., 2023), Ferriera et al. (2024) reported sperm whale sightings off the North-west Cape in May 2023. A total of 26 individual sperm whales were sighted about 30 km offshore in groups up to ten individuals. The sperm whales were observed displaying surface logging behaviour with frequent and numerous blows prior to flukes up dives (indicative of deep feeding behaviour). Such aggregations appear to be an annual occurrence and at the same time as migratory pygmy blue whale feed and move through the same area, to the west and offshore of Ningaloo and North-west Cape. There are no identified BIAs for this species in the NWMR.
Orca (killer whale)	The preferred habitat of killer whales includes oceanic, pelagic and neritic (relatively shallow waters over the continental shelf) regions, in both warm and cold waters. Killer whales appear to be more common in cold, deep waters; however, they have been observed along the continental slope and shelf, particularly near seal colonies, as well as in shallow coastal areas of WA (Bannister et al., 1996; Thiele and Gill, 1999). The total number of killer whales in Australian waters is unknown, however, it may be that the total number of mature animals within waters around the continent is less than 10,000. Killer whales are known to make seasonal movements, and probably follow regular migratory routes, but no information is available for the species in Australian waters. Killer whales are top-level carnivores, and there are reports from around Australia of attacks on dolphins, juvenile humpback whales, blue whales, sperm whales, dugongs and Australian sea lions (Bannister et al., 1996). Killer whales are known to target humpback whales, particularly calves, off Ningaloo Reef during the humpback southern migration season (Pitman et al., 2015). Overall, observations suggest that humpback calves are a predictable, plentiful, and readily taken prey source for killer whales off Ningaloo Reef for at least five months of the year. Additionally, there are records of killer whales attacking dugongs in Shark Bay (Anderson and Prince, 1985). However, there are no recognised key localities or important habitats for killer whales within the NWMR (DSEWPAC, 2012a). There are no identified BIAs for this species in the NWMR.
Australian snubfin dolphin	Stranding and museum specimen records indicate that Australian snubfin dolphins occur only in waters off northern Australia, from approximately Broome on the west coast to the Brisbane River on the east coast (Parra et al., 2002). Aerial and boat-based surveys indicate that Australian snubfin dolphins occur mostly in protected shallow waters close to the coast, and close to river and creek mouths (Parra, 2006; Parra et al., 2006; Parra et al., 2002). Within the NWMR, this species has been found in the shallow coastal waters and estuaries along the Kimberley coast. Beagle and Pender bays on the Dampier Peninsula, and tidal creeks around Yampi Sound and between Kuri Bay and Cape Londonderry are important areas for Australian snubfin dolphins (DEWHA, 2008). Roebuck Bay has generally been considered the south-western limit of snubfin dolphin distribution across northern Australia, but the species has been recorded in Port Hedland harbour, the Dampier Archipelago, Montebello Islands, Exmouth Gulf and off North-west Cape (Allen et al., 2012). Roebuck Bay supports one of the largest known populations of Australian snubfin dolphins (D'Cruz et al., 2022). A first comprehensive catalogue of snubfin dolphin sightings has been compiled for the Kimberley, north-west Western Australia (Bouchet et al. 2021) and documented that snubfin dolphins are consistently encountered in shallow water (<21 m depth) close to (<15 km) freshwater inputs with high detection rates in known hotspots such as Roebuck Bay and Cygnet Bay as well as suitable coastal habitat in the wider Kimberley region. Refer **Table 7-3** and **Figure 7-6** for the location and type of BIAs for Australian snubfin dolphins in the NWMR.
Indo-Pacific humpback dolphin (Australian humpback dolphin)	Previously included with *Sousa chinensis*, the Australian humpback dolphin (*S. sahulensis*) was elevated to a species in 2014. *S. chinensis* is now applied for humpback dolphins in the eastern Indian and western Pacific Oceans and *S. sahulensis* for humpback dolphins in the waters of the Sahul Shelf from northern Australia to southern New Guinea (Jefferson and Rosenbaum, 2014). The Australian humpback dolphin is listed as *S. chinensis* under the EPBC Act. The Australian humpback dolphin (referred to as 'humpback dolphin' hereafter) inhabits the tropical/subtropical waters of the Sahul Shelf across northern Australia and southern Papua New Guinea (Jefferson and Rosenbaum, 2014). Based on historical stranding data, museum specimens and

Species	Key Information
	opportunistic sightings collected during aerial and boat-based surveys for other fauna it has been inferred that humpback dolphins occur from the WA/NT border south-west to Shark Bay (Hanf et al., 2016). Allen et al. (2012) suggested that humpback dolphins use a range of inshore habitats, including both clear and turbid coastal waters across northern WA. The waters surrounding North-west Cape are an important area for the species. Boat-based surveys up to 5 km out from the coast (Brown et al., 2012) recorded humpback dolphins from 0.3 to 4.5 km away from shore and in depths ranging from 1.2 to 20 m, with a mean of ~8 m. Other studies around North-west Cape, surveying waters up to 5 km from the coast, recorded humpback dolphins in water depths of up to 40 m (Hanf et al., 2016). Based on density, site fidelity and residence patterns, North-west Cape is clearly an important habitat toward the south-western limit of this species' range (Hunt et al., 2017). Humpback dolphins do not appear to undergo large-scale seasonal migrations, although seasonal shifts in abundance have been observed (Parra & Cagnazzi 2016 cited in DCCEEW, 2023a). Aerial transect surveys conducted in the Kimberley region show the abundance for humpback dolphins was estimated to be 1,546 in 2016 and 2,690 in 2017 (Raudino et al., 2023). Dolphin densities were greatest in inshore waters, with greatest densities in Exmouth Gulf, Dampier Archipelago, and Great Sandy Islets (Raudino et al., 2023). Aerial surveys targeting dugongs over the western Pilbara have recorded humpback dolphins more than 60 km from the mainland in shallow shelf waters (i.e. <30 m deep) near Barrow Island and the western Lowendal Islands (Hanf, 2015). The species has also been recorded in fringing coral reef and shallow, sheltered sandy lagoons at the Montebello Islands (Raudino et al., 2018). Over the past ten years a number of studies have focused on populations of humpback dolphins along the Kimberley coast, including Roebuck Bay, the Dampier Peninsula, Cone Bay, Yampi Sound, Prince Regent River and the Cambridge Gulf (Brown et al., 2016). Refer **Table 7-3** and **Figure 7-7** for the location and type of BIAs for Indo-Pacific humpback dolphins in the NWMR.
Indo-Pacific bottlenose dolphin (Spotted bottlenose dolphin)	There are four known sub-populations of spotted bottlenose dolphins, of which the Arafura/Timor Sea populations were identified as potentially occurring within the NWMR. The species is restricted to inshore areas such as bays and estuaries, nearshore waters, open coast environments, and shallow offshore waters including coastal areas around oceanic islands, from Shark Bay to the western edge of the Gulf of Carpentaria. The species forages in a range of habitats but is generally restricted to water depths of less than 200 m (DSEWPAC, 2012a). Important foraging/breeding areas include the shallow coastal waters and estuaries along the Kimberley coast and Roebuck Bay. Aerial transect surveys conducted in the Kimberley region showed the abundance for the bottlenose dolphins has been declining with estimated abundance of 3,713 in 2015, 2,638 in 2016 and 1,635 in 2017. Dolphin densities were greatest in inshore waters, with greatest densities in Exmouth Gulf, Dampier Archipelago, and Great Sandy Islets (Raudino et al., 2023). A study at North-west Cape (NWC) found that during Winter months, presence in coastal lagoons west of the NWC was more likely than other seasons. In spring, probability of spotted bottlenose dolphin occurrence was higher outside of the Ningaloo Marine Park (noting summer data was not included in this study) (Haughey et al. 2021). Refer **Table 7-3** and **Figure -** the location and type of BIAs for spotted bottlenose dolphins in the NWMR.
Sirenians	
Dugong	Dugongs are distributed along the WA coast throughout the Gascoyne, Pilbara and Kimberley. Specific areas supporting dugong populations include: Shark Bay; Ningaloo and Exmouth Gulf; the Pilbara coast (Exmouth Gulf to De Grey River [Marsh et al., 2002]); and Eighty Mile Beach and the Kimberley coast, including Roebuck Bay (Brown et al., 2014). Dugong distribution is correlated with the seagrass habitats upon which it feeds, although water temperature has also been correlated with dugong movements and distribution (Preen et al., 1997; Preen, 2004). Dugongs are known to migrate between seagrass habitats (hundreds of kilometres) (Sheppard et al., 2006), and in Shark Bay they exhibit seasonal movements as a behavioural thermoregulatory response to winter water temperatures (Holley et al., 2006; Marsh et al., 2011). Abundance aerial surveys have been conducted in Australian dugong habitat areas since the early 1980s. These surveys indicate that dugong populations are now stable at a regional scale in Shark Bay and in the Exmouth and Ningaloo Reef area. The entire Kimberley region has only been surveyed in 2015 and 2017, so only baseline information on dugong distribution and abundance is available for this area (Cleguer & Marsh, 2023). Refer **Table 7-3** and **Figure 7-8** for the location and type of BIAs for dugong in the NWMR.

Species	Key Information
Pinnipeds	
Australian sea lion	The Australian sea lion is the only endemic pinniped (true seals, fur seals and sea lions) in Australian waters. It is a member of the Otariidae (eared seals) family. The birth interval in Australian sea lions is around 17–18 months. The Australian sea lion is unique among pinnipeds in being the only species that has a non-annual breeding cycle that is also temporally asynchronous across its range (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). This means the breeding period (copulation and birthing) in one colony will occur at different times to breeding in another colony. The Australian sea lion is a specialised benthic forager—that is, it feeds primarily on the sea floor. Studies have shown that the species will eat a range of prey, including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobsters and penguins (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). The Australian sea lion feeds on the continental shelf, most commonly in depths of 20–100 m, and they typically travel up to about 60 km from their colony on each foraging trip, with a maximum distance of around 190 km when over shelf waters. The current breeding distribution of the Australian sea lion extends from the Houtman Abrolhos Islands on the west coast of WA to the Pages Islands in SA. Sites for the 58 breeding colonies occurring in WA and SA are designated as habitat critical to the survival of the species under the Recovery Plan for the Australian sea lion (DSEWPAC, 2013a). Of these, four are located in the SWMR along the west coast of WA: Abrolhos Islands (Easter Group), Beagle Island, North Fisherman Island and Buller Island. There are also a number of foraging BIAs for both males and females along the west coast, extending from the Abrolhos Islands south to Rockingham. There is no designated habitat critical to survival or identified BIAs for this species in the NWMR. **Figure 7-9** shows the foraging BIAs for the Australian sea lion to the south of the NWMR in the northern extent of the SWMR.

7.6 Habitat Critical to the Survival for Marine Mammals in the NWMR

The southern right whale is the only marine mammal which has habitat critical to the survival (HCTS) of a species defined.

The National Recovery Plan for the Southern Right Whale (DCCEEW, 2024a) identifies HCTS under the EPBC Act. The *EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance 2013* state that "An action is likely to have a significant impact on a threatened species if there is a real chance or possibility that it will: adversely affect habitat critical to the survival of a species." The definition of HCTS for a species are areas necessary:

- for activities such as foraging, breeding, roosting, or dispersal,
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators),
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

HCTS for the southern right whale has been identified as all reproductive BIAs across the species range (**Figure 7-1**). The identification of HCTS reflects that southern right whales display strong site fidelity to calving areas in Australian coastal waters, within and between years, over decadal time spans (Bannister, 2001; Charlton et al. 2021 and Watson et al. 2021 cited in DCCEEW, 2024a). Reproductive areas have been identified as HCTS for the species: [:

- they meet the species' essential life cycle requirements for reproduction (e.g., mating, calving, and nursing) and reproduction is known to occur at that location,
- there is a level of occupancy by individual breeding females at these locations of multiple days in any given year, and across multiple years, for long-term maintenance of the species, and
- they are critical for recovery of the southern right whale in terms of expanding habitat occupancy and contributing to the maintenance of genetic diversity as site fidelity may lead to small-scale genetic differences.

No 'Critical Habitat' as defined under section 207A of the EPBC Act has been identified for the southern right whale (DCCEEW, 2024a).

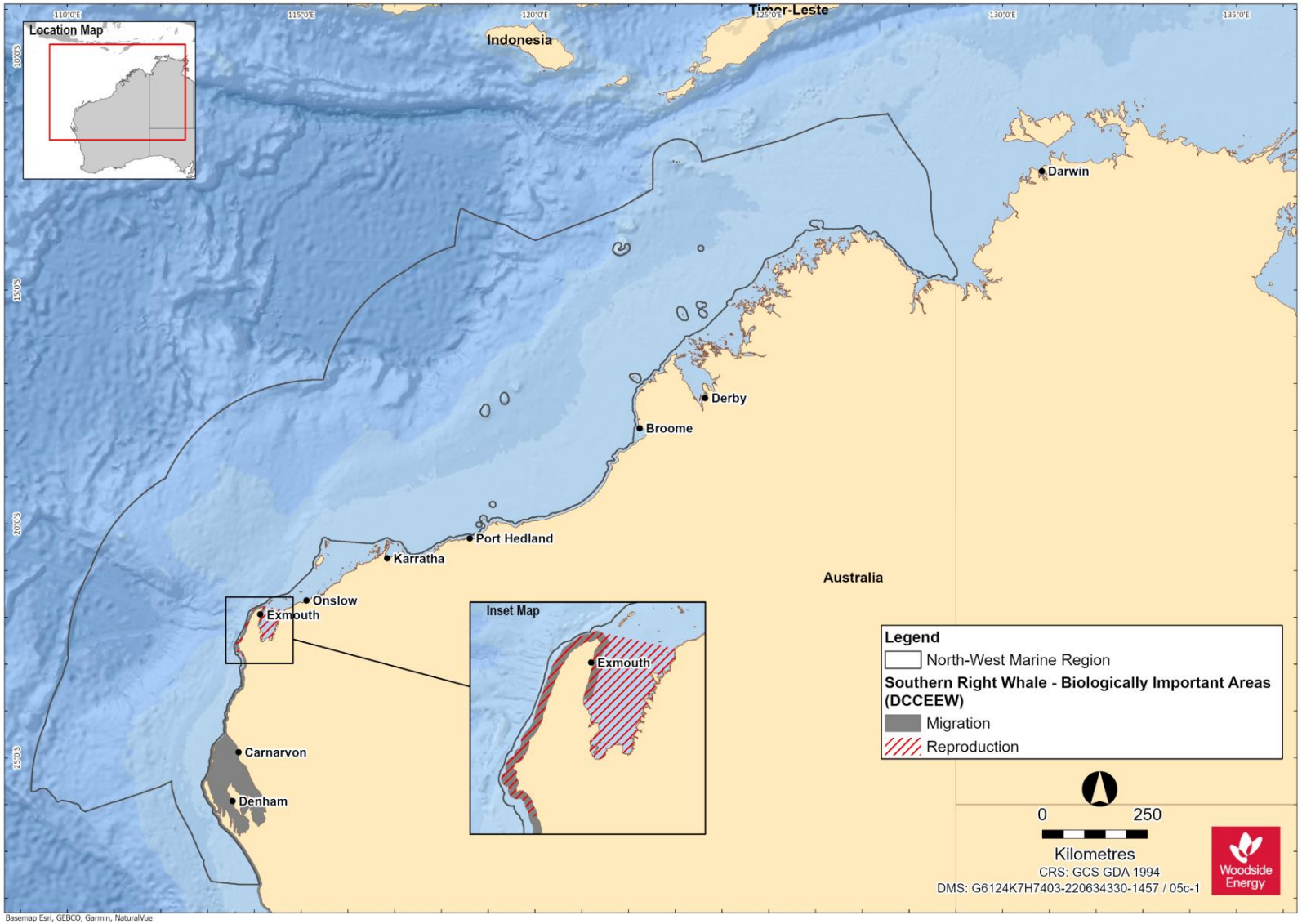


Figure 7-1 Habitat critical to the survival for the southern right whale in the NWMR (DCCEEW, 2024a)

7.7 Biological Important Areas in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024) identified BIAs representing important life cycle stages and behaviours for six species of marine mammal in the NWMR: the humpback whale, the pygmy blue whale, Australian snubfin dolphin, Australian humpback dolphin, spotted bottlenose dolphin and dugong, are presented in **Table 7-3**.

Table 7-3 Marine mammal BIAs within the NWMR.

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
Humpback whale[12]	✓	✓	✓	Shark Bay Exmouth Gulf (north migration – early June) (south migration – late Aug to Oct) Southern Kimberley region	No foraging BIA identified within the NWMR	Nursing Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Core calving in waters off the Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Southern border of the NWMR to north of the Kimberley (arrive June)
Blue whale and pygmy blue whale [15 16]	✓	✓	✓	No resting BIA identified within the NWMR	Possible foraging areas off Ningaloo and Scott Reef	No breeding BIA identified within the NWMR	No calving BIA identified within the NWMR	Augusta to Derby. Along the shelf edge at depths of 500 m to 1000 m; appear close to Ningaloo Coast Montebello Islands area on southern migration (north: April – Aug) (south: Oct – late Dec). Potentially still present January (McCauley et al., 2018).
Southern right whale[17]	-	-	✓	No resting BIA identified within the NWMR	No foraging BIA identified within the NWMR	Exmouth Gulf	No calving BIA identified within the NWMR	Migration along Australian coastline between April to October extending up to the Exmouth Gulf breeding BIA

[14] Includes areas defined as 'foraging', 'foraging likely' and 'foraging (high density prey) as per AMSIS (GA, 2024). These areas are shown in the BIA figures.
[15] DSEWPAC (2012a)
[16] Commonwealth of Australia (2015a)
[17] Revised BIAs (October 2023) - https://www.dcceew.gov.au/environment/marine/bias

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
Australian snubfin dolphin [12]	✓	✓	-	Cambridge Gulf Camden Sound area Prince Regent River Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay, Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	No migration BIA identified within the NWMR
Indo-Pacific humpback dolphin	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet	Roebuck Bay Willie Creek Prince Regent River	No migration BIA identified within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging[14]	Reproduction		Migration
						Breeding	Calving	
					Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island Maret Islands Bigge Island King Sound, southern sector Vansittart Bay, Anjo Peninsula	Doubtful Bay Deception Bay Augustus Island		
Spotted bottlenose dolphin	✓	✓	✓	No resting BIA identified within the NWMR	Roebuck Bay Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Dampier Peninsula
Dugong[12]	✓	✓	✓	No resting BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay Roebuck Bay Dampier Peninsula	Eastern side of Dirk Hartog Island May - September Exmouth Gulf and Ningaloo year-round	Exmouth Gulf Ningaloo Reef Shark Bay	Within Shark Bay June - November and within Roebuck Bay year-round

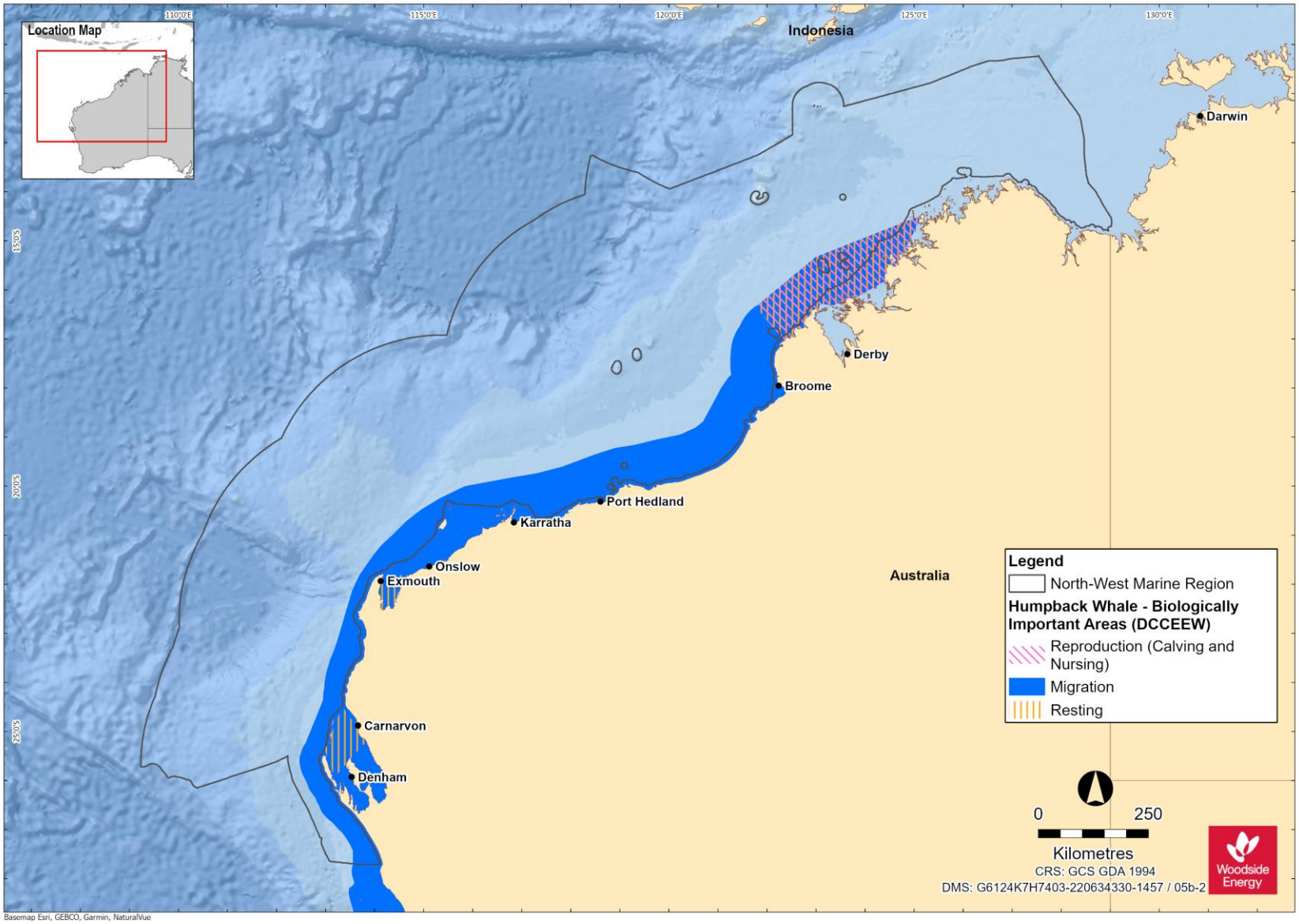


Figure 7-2 Humpback whale BIAs for the NWMR (data source: DCCEEW, 2024b)

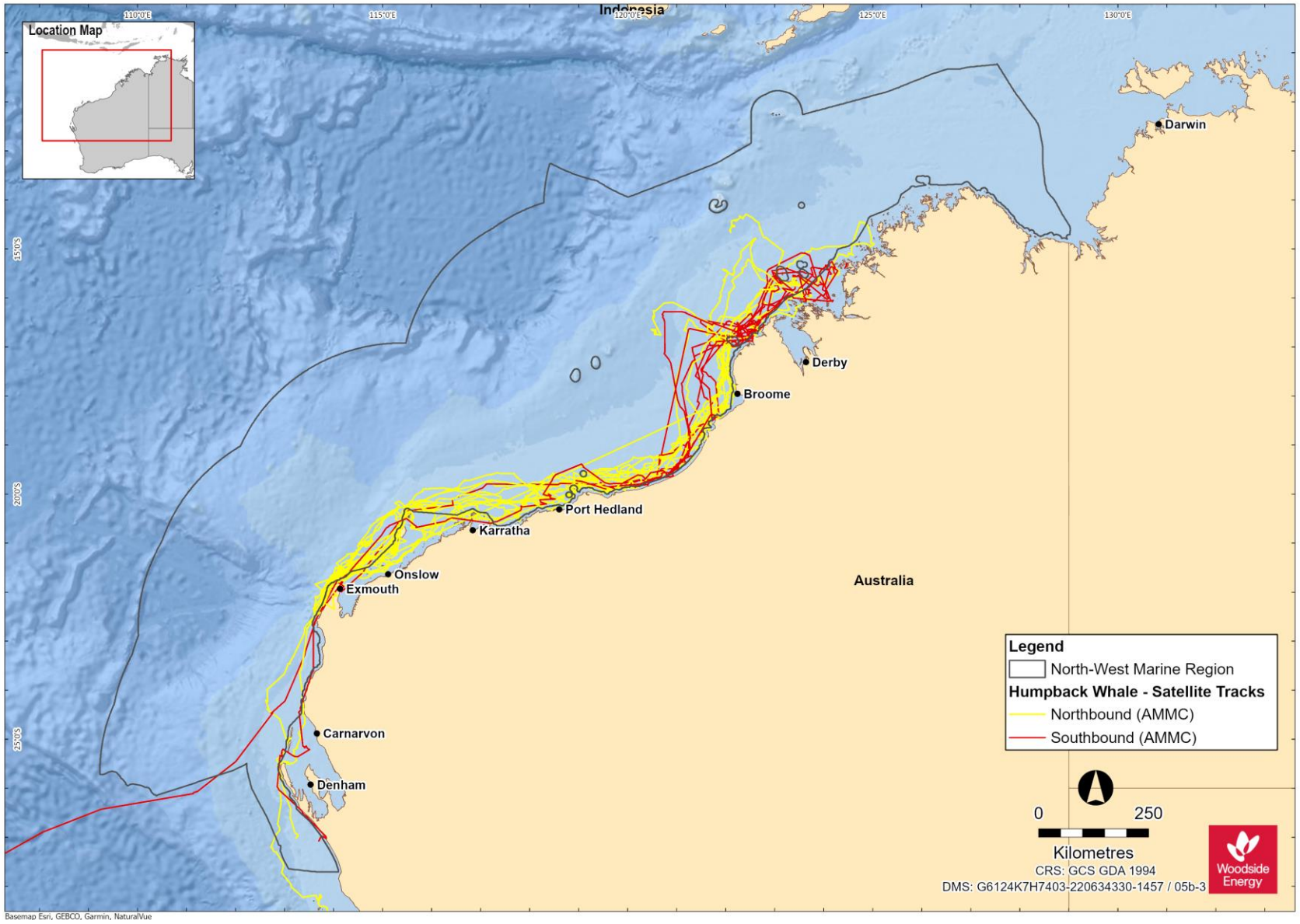


Figure 7-3 Humpback whale tagged tracks for north and south bound migrations (AMMC as published in Double et al. 2010 and 2012)

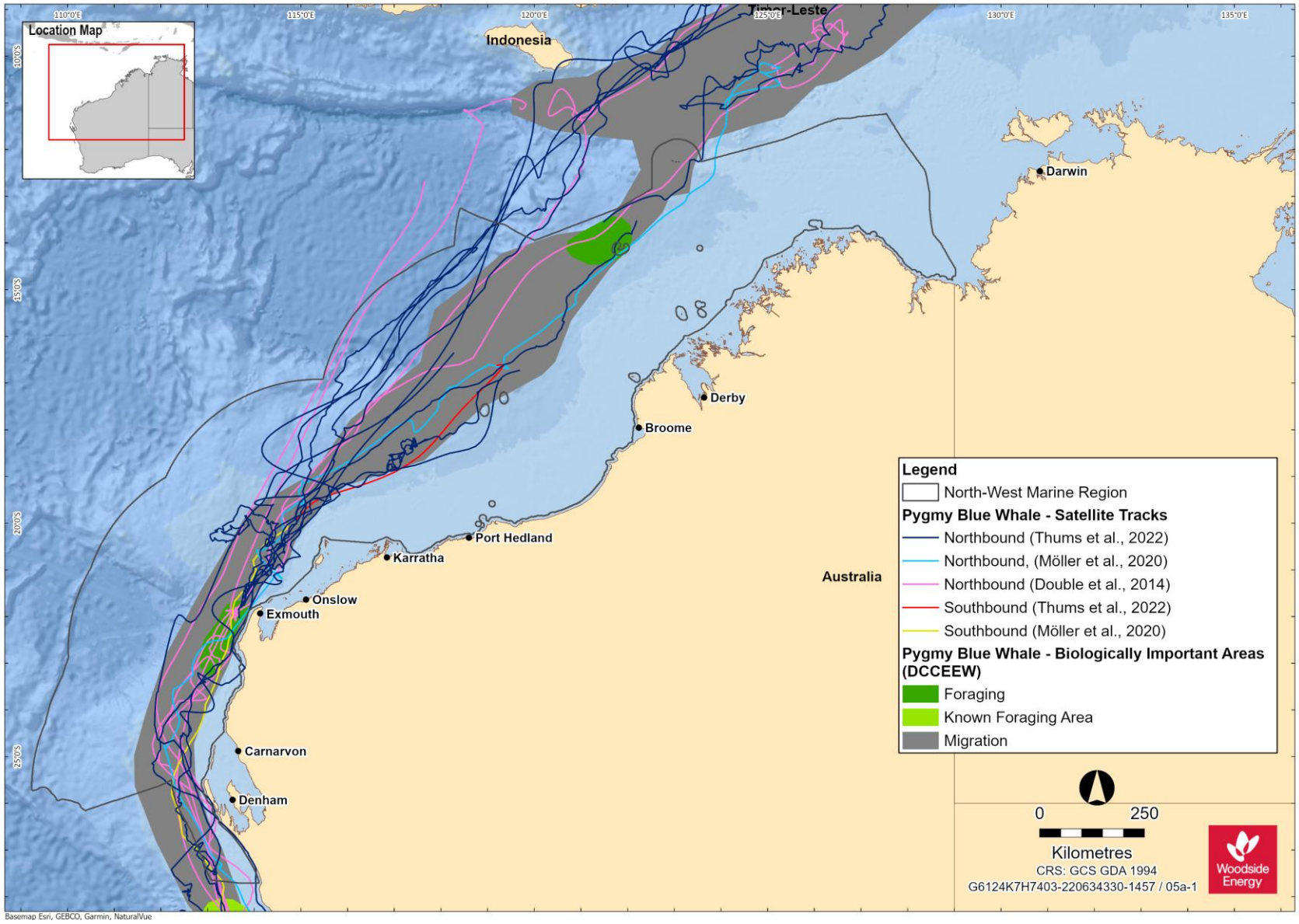


Figure 7-4 Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration (data source for BIAs: DCCEEW, 2024b)

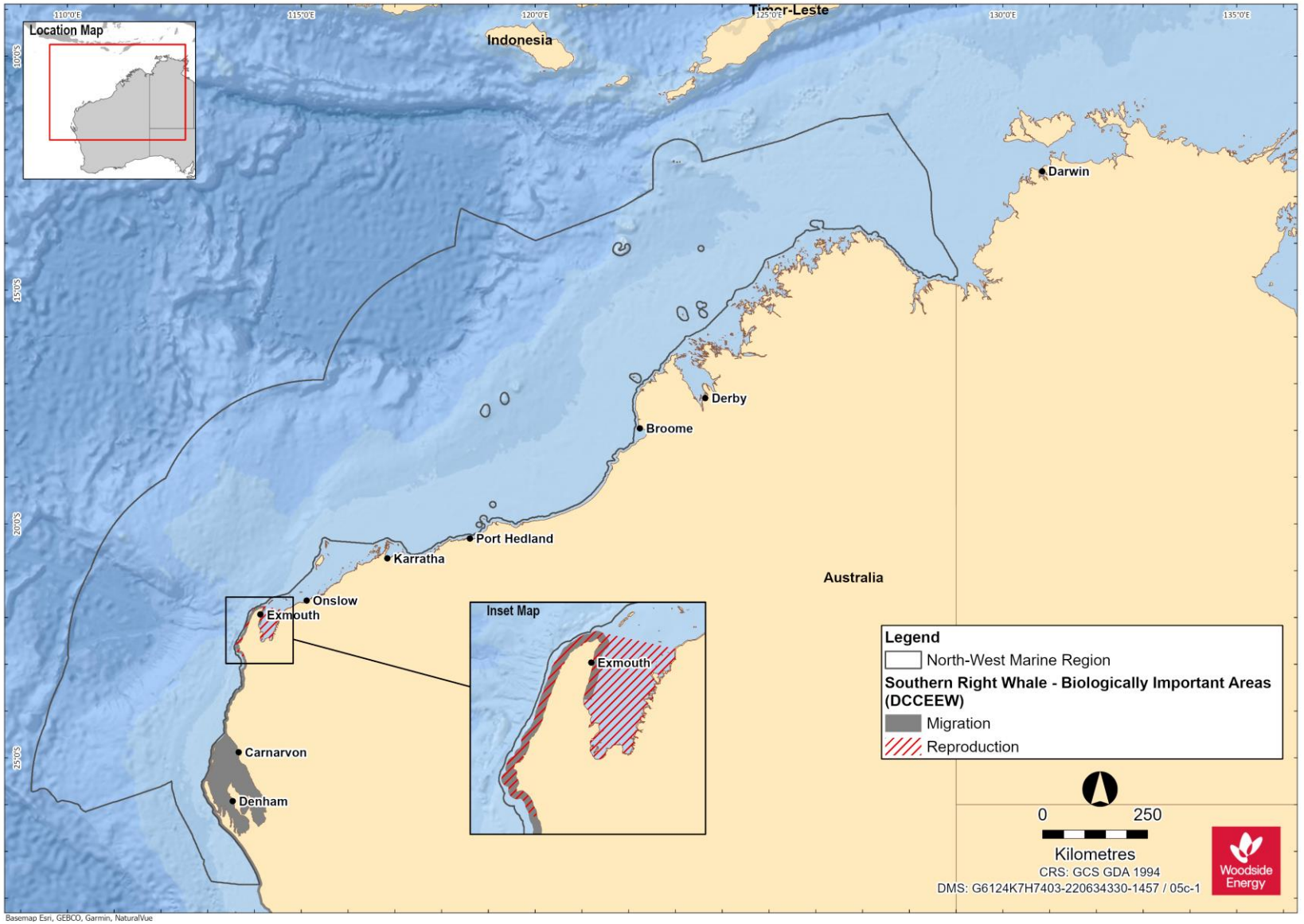


Figure 7-5 Southern right whale BIAs for the NWMR. Migration and reproduction BIAs along the coast extend to 3 nm (data source: DCCEEW, 2024b)

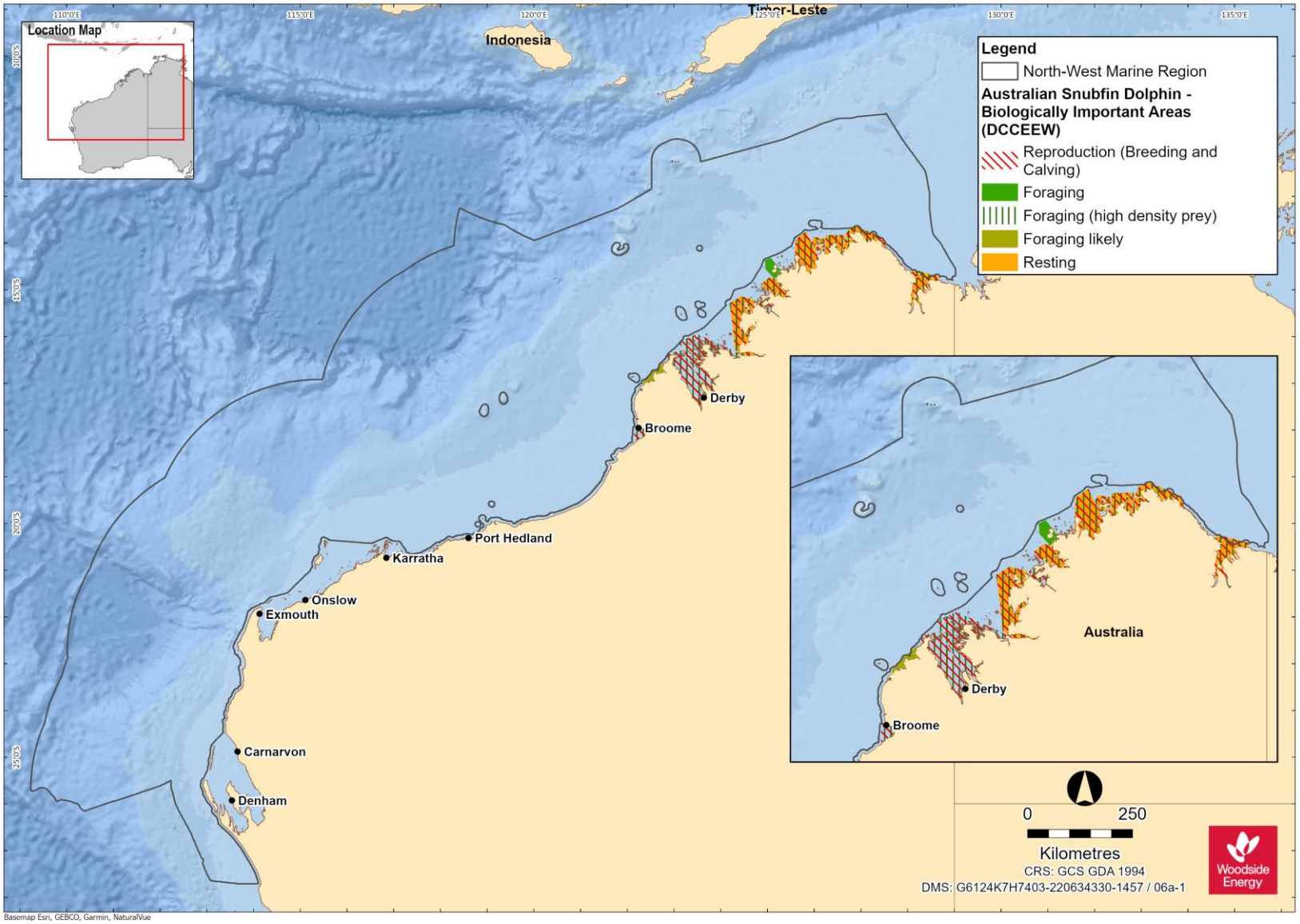


Figure 7-6 Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

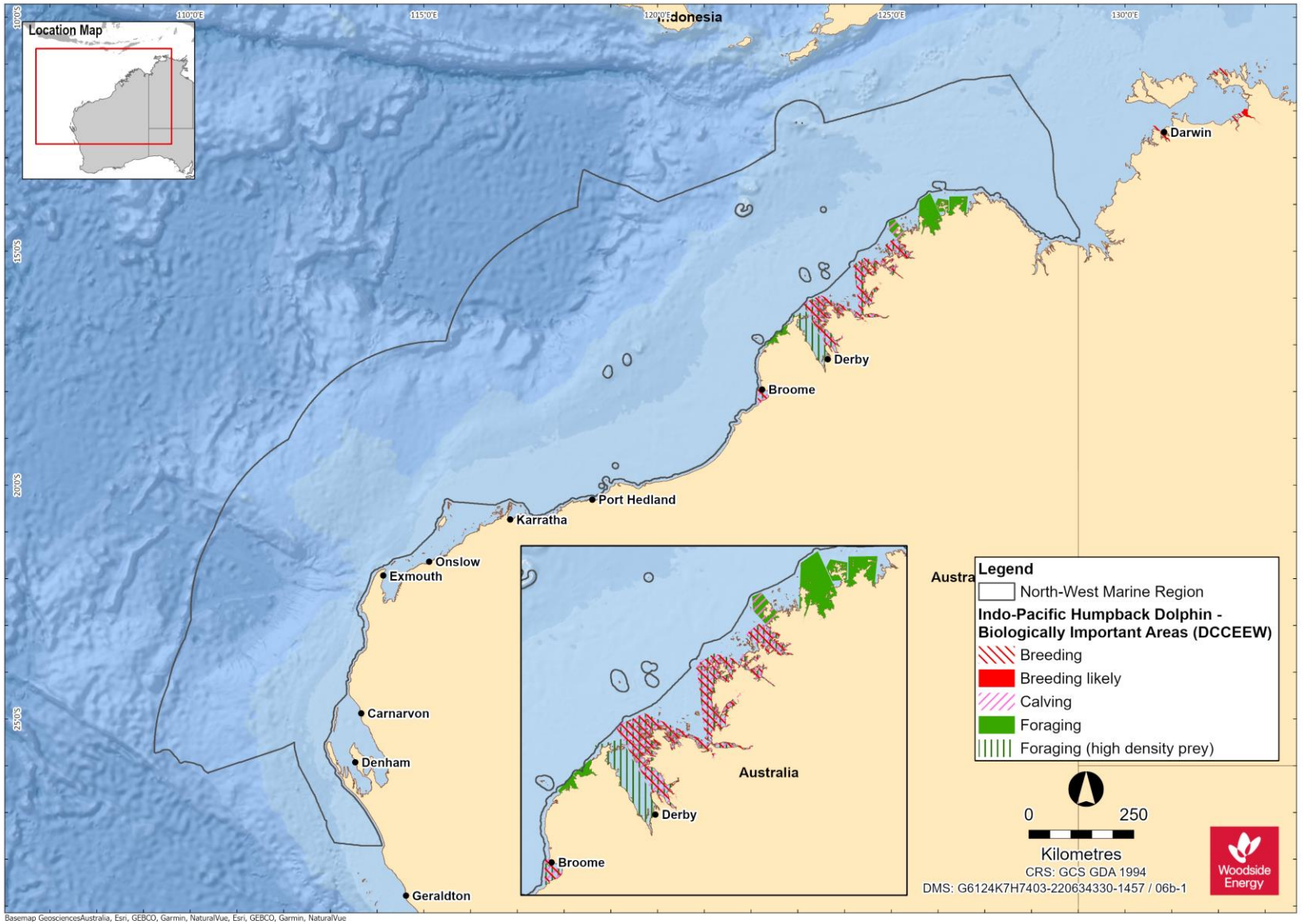


Figure 7-7 Indo-Pacific humpback dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

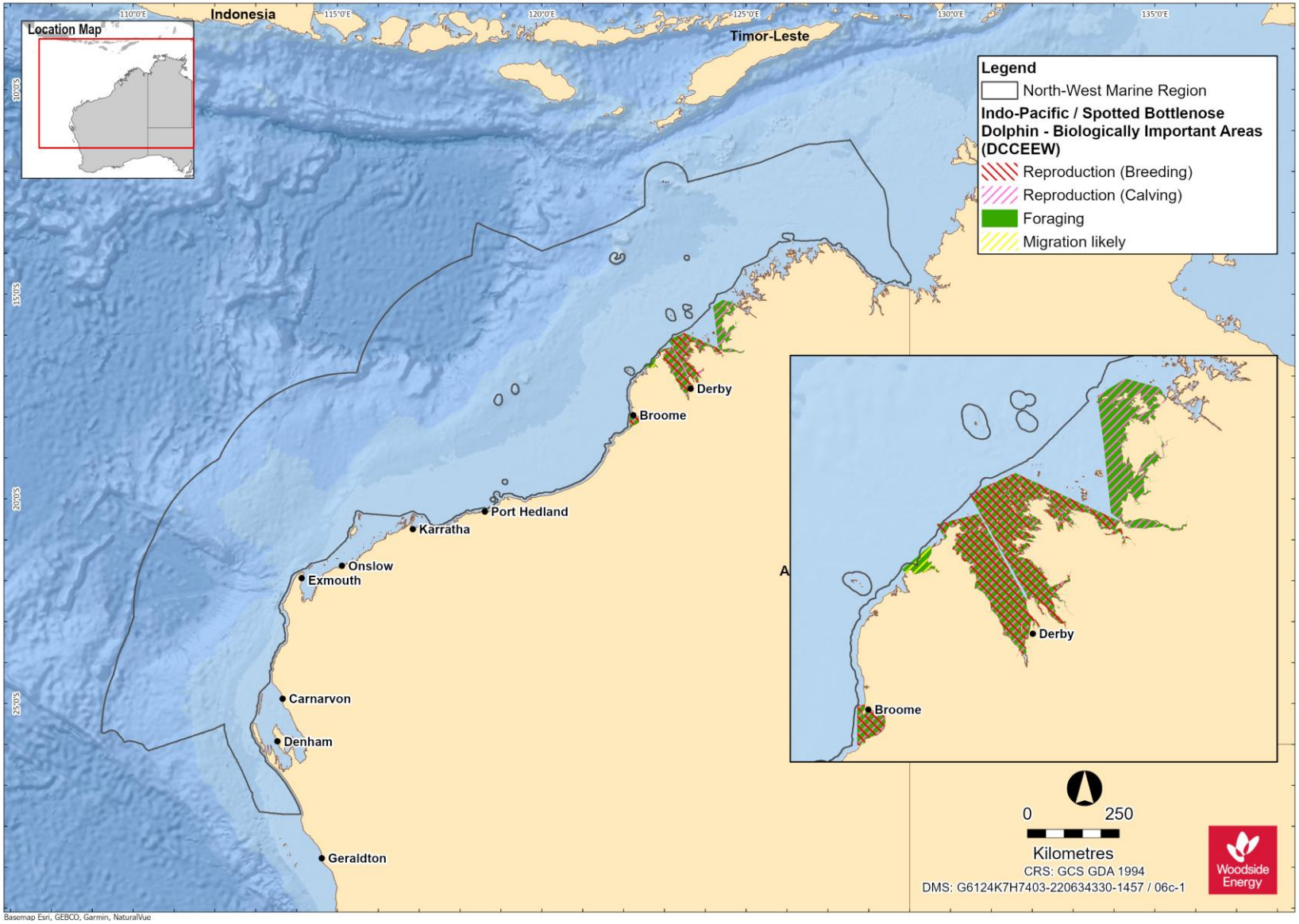


Figure - Spotted bottlenose dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)

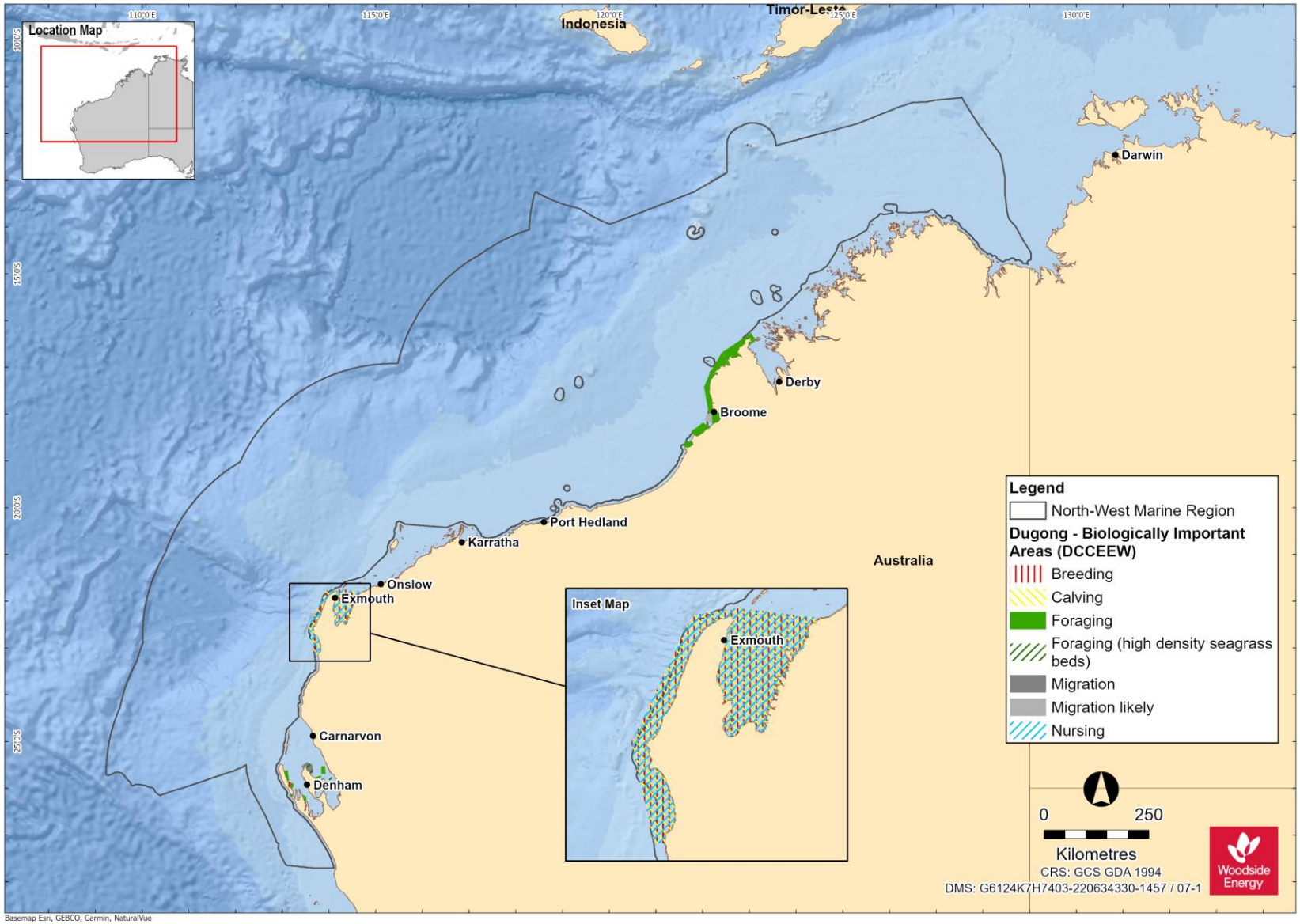


Figure 7-8 Dugong BIAs for the NWMR (data source: DCCEEW, 2024b)

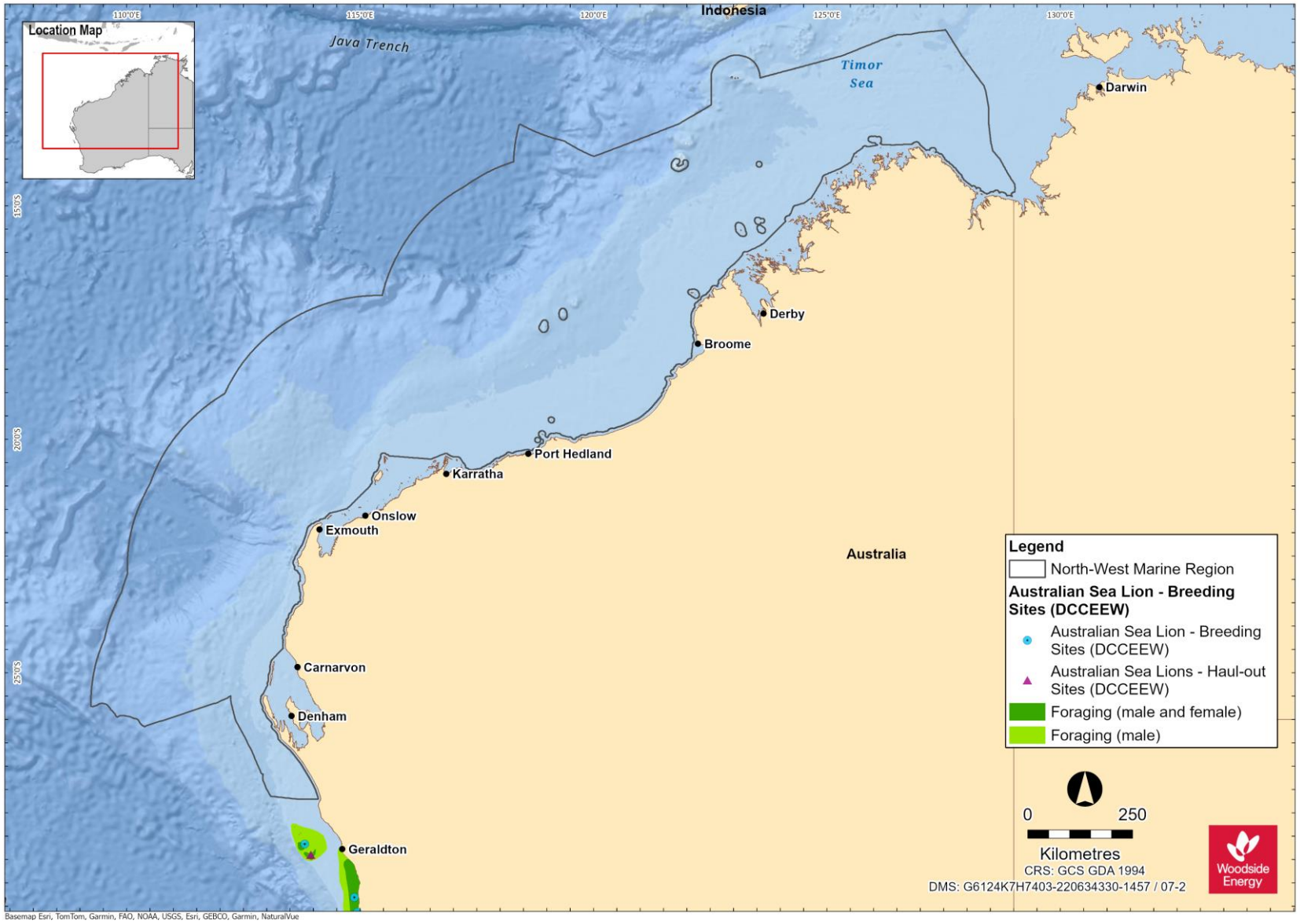


Figure 7-9 Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR (data source: DCCEEW, 2024b)

7.8 Marine Mammal Summary for the NWMR

7.8.1 Browse

The Browse activity area includes biologically important habitat for six threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (breeding, calving and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas);
- spotted bottlenose dolphin (foraging, breeding and calving areas); and
- dugong (foraging).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.8.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for six threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas);
- spotted bottlenose dolphin (present but no BIAs); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.8.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for four threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- southern right whale (reproduction area);
- humpback whale (resting and migration areas);
- spotted bottlenose dolphin (present but no BIAs); and
- dugong (foraging and breeding/ calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

8. SEABIRDS AND MIGRATORY SHOREBIRDS OF THE NWMR

8.1 Regional Context

The NWMR supports high numbers and species diversity of seabirds and migratory shorebirds including many that are EPBC Act listed, threatened and migratory. The NWMR marine bioregional plan reported 34 seabird species (listed as threatened, migratory and/or marine) that are known to occur, and 30 of 37 species of migratory shorebird species that regularly occur in Australia, are recorded at Ashmore Reef in the NWMR (DSEWPAC, 2012d). The NWMR marine bioregional plan also noted that Roebuck Bay and Eighty Mile Beach are internationally significant and recognised migratory shorebird locations.

A 'Seabird and Shorebird Existing Knowledge and Threats' report was prepared (2022) and updated in 2024 (Worley, 2024) to identify key bird species (categorised: pelagic seabirds, nearshore seabirds, shorebirds and others) and their threats in the NWMR (Advisian, 2024). The high and moderate occurrence species for the NWMR were informed from this report, as well as from PMST results. The report identified 92 species.

Each species was assigned to one of three frequency of occurrence levels:

- High – breeding and foraging aggregations known to occur.
- Moderate – known or likely presence.
- Low – may occur, or at limits of species range.

Table 8-1 includes those considered key species, i.e., high or moderate occurrence (Worley, 2024), and listed threatened and/or migratory under the EPBC Act with a total of 56 key species identified (comprising 22 seabirds and 34 shorebirds).

Many migratory seabirds and shorebirds are protected through bilateral agreements between Australia and Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), recognising the migratory route and important stopover and resting habitats of the East Asian-Australasian Flyway (EAAF). Important migratory bird habitats are also recognised as part of protected wetlands of international significance under the Ramsar Convention. Important Bird Areas (IBAs) for the NWMR, which are also recognised as global Key Biodiversity Areas (KBAs) (BirdLife Australia[18]), include:

- Roebuck Bay KBA (and Ramsar site): Internationally significant migratory shorebird species.
- Mandora Marsh and Anna Plains KBA (adjacent to Eighty Mile Beach, Ramsar site): Internationally significant migratory shorebird species.
- Dampier Saltworks KBA: Internationally significant migratory shorebird species.
- Montebello Islands KBA: Shorebird and seabird species.
- Barrow Island KBA: Shorebird and seabird species.
- Exmouth Gulf Mangroves KBA: Internationally significant migratory shorebird species.

Table 8-1 presents a list of the high and moderate occurrence threatened and migratory seabird and shorebird species (as per subject matter expert review, Worley (2024)) that occur within the NWMR, with their conservation/protected status, relevant recovery plans and/or conservation advice.

18 https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20(KBAs,of%20advocacy%20for%20protected%20areas. [Accessed April, 2021]

Table 8-1. High and moderate occurrence seabird and migratory shorebird species (threatened/migratory/marine) identified by the EPBC Act PMST and NWMR Seabird and Shorebird Existing Knowledge and Threats report as potentially occurring within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Seabirds							
Diomedea amsterdamensis	Amsterdam Albatross	Endangered	Migratory	Marine	Critically Endangered	Endangered	National Recovery Plan for albatrosses and petrels (DCCEEW, 2022)
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Vulnerable	Vulnerable	National Recovery Plan for the Australian Fairy Tern *Sternula nereis nereis (Commonwealth of Australia, 2020b)* EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Anous tenuirostris melanops	Australian lesser noddy	Vulnerable	N/A	Marine	Endangered	Least Concern	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 hectares (DEWHA, 2009)
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Least Concern	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
Sula leucogaster	Brown booby	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018)
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	Least Concern	

[19] Threatened and Priority Fauna List – April 2024 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 13/08/2024)

[20] IUCN. 2024. *The IUCN Red List of Threatened Species. Version 2024-1*. https://www.iucnredlist.org (accessed on 13/08/2024)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	Near Threatened	
Oceanites oceanicus	Wilson's storm petrel	N/A	Migratory	Marine	Migratory	Least Concern	
Anous stolidus	Common noddy	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for predation by feral cats (DoE, 2015c)
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	
Fregata minor	Great frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	
Sula sula	Red-footed booby	N/A	Migratory	Marine	Migratory	Least Concern	
Phaethon rubricauda	Red-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
Onychiprion anaethetus (listed as *Sterna anaethetus)*	Bridled tern	N/A	Migratory	Marine	Migratory	Least Concern	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sternula albifrons	Little tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Migratory	Least Concern	
Sterna hirundo	Common tern	N/A	Migratory	Marine	Migratory	Least Concern	
Hydroprogne caspia	Caspian tern	N/A	Migratory	Marine	Migratory	Least Concern	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Migratory	Near Threatened	
Sula dactylatra	Masked booby	N/A	Migratory	Marine	Migratory	Least Concern	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
All seabird species							Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2020a) National Light Pollution Guidelines for Wildlife (DCCEEW, 2023d)
	Migratory shorebirds						
Numenius madagascariensis	Eastern curlew, Far Eastern curlew	Critically endangered	Migratory	Marine	Critically endangered	Endangered	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEW, 2023f)
Calidris ferruginea	Curlew sandpiper	Critically endangered	Migratory	Marine	Critically endangered	Near Threatened	Conservation Advice *Calidris ferruginea* Curlew sandpiper (DCCEEW, 2023g)
Limosa lapponica menzbieri	Bar-tailed godwit (*menzbieri*)	Endangered	Migratory	Marine	Critically endangered	Near Threatened	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (DCCEEW, 2024e)
Charadrius mongolus	Lesser sand plover	Endangered	Migratory	Marine	Endangered	Endangered	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threated Species Scientific Committee, 2016)
Rostratula australis	Australian painted snipe	Endangered	N/A	Marine	Endangered	Endangered	Conservation Advice *Rostratula australis* Australian painted snipe (Threatened Species Scientific Committee, 2013a)
Calidris canutus	Red knot	Vulnerable	Migratory	Marine	Endangered	Near Threatened	Conservation Advice *Calidris canutus* Red knot (DCCEEW, 2024f)
Calidris tenuirostris	Great knot	Vulnerable	Migratory	Marine	Critically endangered	Endangered	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW, 2024g)
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Least Concern	Conservation Advice *Charadrius leschenaultia* Greater sand plover (DCCEEW, 2023h)
Limosa limosa	Black-tailed godwit	Endangered	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limosa limosa* black-tailed godwit (DCCEEW, 2024h)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Limnodromus semipalmatus	Asian dowitcher	Vulnerable	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limnodromus semipalmatus* Asian dowitcher (DCCEEW, 2024j)
Tringa nebularia	Common greenshank	Endangered	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Tringa nebularia* Common greenshank (DCCEEW, 2024i).
Arenaria interpres	Ruddy turnstone	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Arenaria interpres* Ruddy turnstone (DCCEEW, 2024k)
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Marine	Migratory	Vulnerable	Conservation Advice for *Calidris acuminata* Sharp-tailed sandpiper (DCCEEW, 2024l)
Xenus cinereus	Terek sandpiper	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Xenus cinereus* Terek sandpiper (DCCEEW, 2024m)
Pluvialis squatarola	Grey plover	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Pluvialis squatarola* Grey plover (DCCEEW, 2024n)
Pluvialis fulva	Pacific golden plover	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa totanus	Common redshank	N/A	Migratory	Marine	Migratory	Least Concern	
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa stagnatilis	Marsh sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris melanotos	Pectoral sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa glareola	Wood sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Limicola falcinellus	Broad billed sand piper	N/A	Migratory	Marine	Migratory	Least Concern	
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	Marine	Migratory	Near Threatened	
Calidris ruficollis	Red-necked stint	N/A	Migratory	Marine	Migratory	Near Threatened	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
Calidris pugnax	Ruff	N/A	Migratory	Marine	Migratory	Least Concern	
Xenus cinereus	Terek sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Numenius phaeopus	Whimbrel	N/A	Migratory	Marine	Migratory	Least Concern	
Numenius minutus	Little curlew	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris alba	Sanderling	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris subminuta	Long-toed stint	N/A	Migratory	Marine	Migratory	Least Concern	
Gallinago stenura	Pin-tailed snipe	N/A	Migratory	Marine	Migratory	Least Concern	
Gallinago megala	Swinhoe's snipe	N/A	Migratory	Marine	Migratory	Least Concern	
Glareola maldivarum	Oriental pratincole	N/A	Migratory	Marine	Migratory	Least Concern	
Charadrius veredus	Oriental plover	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa brevipes	Grey-tailed tattler	N/A	Migratory	Marine	Migratory and Priority species	Near Threatened	
All migratory shorebird species							Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c) EPBC Act Policy Statement 3.21—Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017) National Light Pollution Guidelines for Wildlife (DCCEEW, 2023)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (as per PMST report APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and NMR)			*Biodiversity Conservation Act 2016* (WA)[19]	IUCN Red List of Threatened Species (non-statutory)[20]	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	Global Status	
	Other marine birds						
Apus pacificus	Fork-tailed swift		Migratory	Marine	N/A	Least Concern	None
Pandion haliaetus	Osprey		Migratory	Marine	N/A	Least Concern	None

8.2 Seabirds in the NWMR

Seabirds are birds that are adapted to life within the marine environment (oceanic and coastal) and are generally long-lived, have delayed breeding and have fewer young than other bird species (Commonwealth of Australia, 2020a).

At least 22 key seabird species (high and moderate occurrence, listed as threatened and/ or migratory under the EPBC Act) are known to occur in the NWMR. These include a variety of species of terns, noddies, petrels, shearwaters, frigatebirds, and boobies.

Seabird species can be grouped into pelagic and nearshore seabirds, based on lifecycle behaviour, distributions and key habitats (Worley, 2024). Pelagic species spend most of their life at sea, ranging over large distances to forage. These pelagic species only come onshore to breed and raise chicks at natal or high-fidelity breeding colonies on remote, offshore island locations in and adjacent to the NWMR. Many species are ecologically significant to the NWMR, as they are endemic to the region, can be present in large numbers in breeding seasons and non-breeding seasons, and many exhibit extensive annual migrations that include marine areas outside the Australian EEZ (DSEWPAC, 2012d). Nearshore seabirds are confined to nearshore areas (unless migrating), have shorter foraging trips during breeding and may rest on land/shoreline habitats outside of breeding periods (Worley, 2024).

The presence of seabirds within the NWMR is influenced by seabird species that migrate and forage in the area during the non-breeding season and this includes many seabird species that breed on the Houtman Abrolhos in the SWMR. Pelagic seabirds have been documented foraging at current boundaries and seasonal upwellings within the NWMR (refer to Sutton et al., 2019). The Houtman Abrolhos Islands National Park located in the SWMR is one of the most significant seabird breeding locations in the eastern Indian Ocean. 16 species of seabirds breed there. 80% of common (brown) noddies, 40% of sooty terns and all the lesser noddies found in Australia nest at the Houtman Abrolhos (Surman, 2019). Important seabird areas in the NWMR are as identified by the KBAs (refer to **Section 8.1**), EPBC Act Bioregional Biologically Important Areas and subject matter expert review, as presented in Worley (2024).

High occurrence key seabird species

Species descriptions for high occurrence key seabird species are provided below. High occurrence seabird species were defined as those with breeding and foraging aggregations within NWMR (Worley, 2024).

Wedge-tailed shearwater (pelagic seabird)

The wedge-tailed shearwater (*Ardenna pacifica*) is listed migratory under the EPBC Act and *Biodiversity Conservation Act 2016* (WA) (BC Act). It is a pelagic, marine seabird known from tropical and subtropical waters. Its distribution is widespread across the Indian and Pacific oceans with a global population of 2.6 million pairs. Of this, approximately 1 million pairs breed in Australia, most of which do so on islands in Western Australia between Rottnest Island in the south to Ashmore Reef in the north. The largest breeding populations are at the Houtman Abrolhos (600,000 pairs – Surman and Nicholson 2009), and throughout the NWS region of the NWMR, where large populations on Muiron Islands (300,000 pairs) and Serrurier Island (60,000 pairs) exist (Surman and Nicholson 2009, 2015).

Adults are absent from their breeding colonies during the interbreeding period and return from their tropical Indian Ocean over-wintering grounds from late-June onwards to re-excavate their burrows. This species is highly synchronous in timing of breeding; all eggs within a colony are laid within a ten-day period. They lay their single egg during early-November, which is then incubated until the chick hatches (after 53 days) in early-January. Once hatched, adults leave the burrows to forage locally during the day returning at night to feed chicks until they are ready to fledge (Nicholson 2002). Due to the high synchronicity in egg laying, fledging is restricted to the first two weeks of April (Nicholson 2002).

Breeding behaviours are nocturnal in wedge-tailed shearwaters. Adults return to and depart the colony at night and fledglings depart the colony at night. In the lead up to fledging, chicks also leave their burrows to exercise their wings outside burrows.

Adults may not return to feed chicks each night; wedge-tailed shearwaters breeding on the Muiron Island (north) undertook extensive foraging trips during the incubation period (1,200 – 1400 km) and shorter trips during chick rearing (<300 km, Cannell et al., 2019). Longer foraging trips took individuals in a north-west direction offshore towards oceanic seamounts. Conversely, the shorter tended to include waters to the west and north-west of the Muiron Islands (Cannell et al., 2019). In addition to the Muiron Islands, this dual foraging strategy, whereby parents alternate or mix short and long trips, have been recorded in wedge-tailed shearwaters breeding at Heron Island, Queensland, Lord Howe Island, Tasmania (Peck & Congdon, 2005), and New Caledonia (Weimerskirch et al., 2020). However, divergent foraging strategies have been detected between colonies, which is linked to the proximity of colonies to high productivity waters (Peck & Congdon, 2005; Weimerskirch et al., 2020).

While the presence of squid and lanternfish in their diet (Surman & Nicholson, 2009) suggests nocturnal foraging occurs in this species, GPS tracking studies found that foraging activities at sea were more frequent during the day compared with at night (Weimerskirch et al., 2020; Catry et al., 2009). During the day, resting periods on the sea surface were short whereas at night individuals spent a large proportion of their time resting at the surface (Weimerskirch et al*.,* 2020). Other prey species include schooling bait fishes and cephalopods, often feeding in association with other pelagic seabird species such as sooty terns and common noddies, and pelagic fishes such as tunas and mackerels. Diet composition is likely to vary between colonies, depending upon the prey available, and thus determining both the foraging strategy, as described above, and also the division of nocturnal and diurnal foraging. Wedge-tailed shearwaters dive between 3 and 66 m, actively pursuing prey by feeding at the surface or by actively swimming below bait schools.

Post-breeding, wedge-tailed shearwaters breeding on the Houtman Abrolhos Islands and Varanus Island migrated 4,500 km north-west to equatorial waters of the Indian Ocean around 90°E (Surman et al*.,* 2018), traversing the NWMR, and those from the Great Barrier Reef migrated to the northern hemisphere, approximately 6,000 km northwards to Micronesia (McDuie and Congdon, 2016).

Wedge-tailed shearwaters are observed during breeding across all shelf waters and are the most frequently encountered seabird at sea. Large numbers of wedge-tailed shearwaters have been observed foraging off the North-west Shelf between May - August (Surman pers obs.).

Foraging and breeding BIAs are located for the wedge-tailed shearwater across the NWMR (**Figure 8-1**). It is noted that both breeding and foraging BIAs represent foraging habitat utilised by adult (chick-rearing) wedge-tailed shearwaters during the breeding season.

Australian lesser noddy (pelagic seabird)

The Australian lesser noddy (*Anous tenuirostris melanops*), which is endemic to Australia, is listed vulnerable under the EBPC Act and endangered under the BC Act. The largest breeding colonies are found on the Houtman Abrolhos Islands with fewer records of breeding on

Ashmore Reef (Clark et al., 2011; Cannell & Surman 2021). Possible colonisation of Cocos (Keeling) Island is reported; however, it is unconfirmed if this is the Australian subspecies (Stokes and Hinchey 1990).

At the Houtman Abrolhos Islands, the breeding population has been estimated at ~50,000 breeding pairs (Surman et al., 2016). At this location, studies indicate that breeding is not highly synchronised; the single egg clutches were laid over a 102-day period from late August to early December, peaking in September (Surman & Wooller 1995). The incubation period averaged 34 days and the fledging period 40 days. (Surman & Wooller 1995).

Studies of foraging ecology of breeding Australian lesser noddies at the Houtman Abrolhos Islands found that they are largely diurnal, foraging between 04h00 and 20h40 and returning to their colony at night (Surman et al., 2017). From this study, the GPS tracks of 17 adults during incubation or chick provisioning revealed that most foraging trips lasted for between 2 and 4 hours with a total trip distance of less than 40 km. However, some trips lasted up to 16 hours covering distances of up to 112 km (Surman et al., 2017). During non-breeding, birds appear to remain near the breeding islands year-round (Higgins and Davies 1996).

Due to differences in climate and seasonality experienced at the Houtman Abrolhos Islands and Ashmore Reef, timing of breeding differs. The Ashmore Reef population has been recorded breeding in the Austral autumn/winter (Clarke and Herrod, 2016), while the Houtman Abrolhos Islands populations breed during the Austral spring/summer (Surman and Wooller, 1995).

No BIAs for the Australian lesser noddy overlap the NWMR and tracking data suggests that individuals breeding at the Houtman Abrolhos Islands foraged predominantly in a south-westerly direction, remaining within waters of the SWMR (Surman et al., 2017). Several individuals were observed roosting with common noddies on Bernier Island, near Carnarvon in 2022 (Nicholson pers obs.). However, it is unlikely that waters of the NWMR provide significant habitat for individuals breeding at the Houtman Abrolhos Islands. The small population of this subspecies breeding on Ashmore Reef may show similar foraging ecology during breeding and remain in the vicinity of the islands, utilising habitats of the NWMR.

Brown booby (pelagic seabird)

The brown booby (*Sula leucogaster*) is listed migratory under the EPBC Act and BC Act. It is a cosmopolitan species with a pan-tropical distribution. Within the NWMR, large colonies occur at offshore islands including the Lacepede Islands (17,000 pairs, Mustoe and Edmunds 2008), Ashmore Reef (5,000 pairs at Middle Island and 3000 pairs at East Island in 2007, Swann 2005a; Swann 2005b; Swann 2005c; Milton 2005; Clarke 2010), Bedout Island (1,000 pairs) and Adele Island (7,500 pairs, Burbidge et al. 1987). Small colonies of up to 10 pairs have been recorded at Overhanging Rock, within the Lowendal Islands (Nicholson, pers obs.). The total breeding population in the Australian region in 1996–97 was estimated at 59,940 to 73,900 pairs (WBM Oceanics & Claridge 1997).

Brown boobies do not migrate far from their breeding islands, rarely dispersing more than 240 km from their natal colony (Dunlop et al., 2001). Brown boobies forage within 50 km of their colony where they plunge dive, reaching up to 15 m depth and pursuing their prey when ascending after the dive (Austin et al., 2021). Brown booby diet is principally medium to large surface schooling prey (northern pilchard, Indian anchovy, flying fish and cephalopods), often associated with feeding tunas and mackerels (Cannell et al. 2022; Austin et al., 2021).

Brown boobies are not prone to waterlogging and will roost on the seas surface and are known to form large aggregations on oil and gas platforms throughout the NWMR (Surman pers obs.), Woodside facilities indicating wider distribution of non-breeding individuals across the NWMR.

Breeding/foraging BIAs for the brown booby in the NWMR are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (**Figure 8-3**). Breeding is reported as occurring between January and March, however this becomes protracted through to October at Ashmore Reef (Clarke et al. 2016). Brown Boobies are resident in the NWMR throughout the year, although they may forage long distances over the open ocean (Surman and Nicholson 2011).

Breeding/foraging BIAs for the brown booby in the NWMR are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (**Figure 8-3**).

Red-footed booby (pelagic seabird)

The red-footed booby (*Sula sula*) is listed migratory under the EPBC Act and BC Act. Compared to brown boobies, the red-footed booby occurs in fewer numbers across the NWMR. Within the NWMR they breed at Ashmore Reef (up to 100 pairs, Clarke & Herrod, 2016) and Adele Island (14 pairs, Botle et al*.,* 2004). At Ashmore Reef they have been recorded breeding year-round (Clarke & Herrod, 2016).

The red-footed booby is one of the most widely distributed of the boobies across oceanic waters in the tropical Indian Ocean; during non-breeding, individuals have been observed up to 800 km from their natal colony (Dunlop et al*.,* 2001). However, individuals are limited to a range of 150 km from the breeding colony when breeding (Wiemerskirsch et al*.,* 2005). In the Ashmore area, adults have been detected up to 125 km from the nearest breeding islands during October (unpubl. Data, referenced in Clarke & Herrod, 2016).

Red-footed boobies are diurnal foragers, plunge diving for flying fishes (predominately) across their range (Commonwealth of Australia, 2020a). Breeding/foraging BIAs for the red-footed booby are associated with breeding colonies at Ashmore Reef and Adele Island (**Figure 8-3**).

Masked booby (pelagic seabird)

The masked booby (*Sula dactylatra*) is listed migratory under the EBPC Act. Within the NWMR, the sub-species *Sula dactylatra bedouti* ranges from the Dampier Archipelago, along the entire coast into the NMR and across to Queensland (Merchant & Higgins, 1990). Individuals have also been recorded at Barrow Island.

Within the NWMR, Bedout and Adele Island represent the main breeding locations with 400 and 320 breeding pairs estimated at each respectively (Marchant & Higgins 1990; Swann et al. 2002). Breeding is also reported at the Ashmore Reef group with up to 30 breeding pairs recorded on Middle Island and 15 pairs on East Island (Burbidge & Fuller 1996; Hassell et al., 2003; Swann 2005a; Swann 2005b; Swann 2005c; Milton 2005; Clarke 2010; Clarke et al. 2016). Up to two pairs have also been recorded breeding in the Lacapede Group (Hassell et al. 2003).

A recent study of individuals from Bedout Island indicated low genetic exchanges (mitochondrial genes) with other masked booby colonies currently studied, suggesting a dependence on local recruitment for population persistence (Kingsley et al., 2019). Further, the low exchange of mitochondrial genes may reflect high breeding site fidelity and limited foraging distances during the breeding season. Due to the concentration in a relatively small number of areas to breed, any catastrophe at these sites (e.g. oil spills, or disturbance/vandalism of nests) could have a substantial impact on the population (Birds Australia August 2005).

Studies of foraging behaviour of individuals breeding within the NWMR are lacking, however studies at other locations indicate that foraging is diurnal and ranges vary between 100 and 200 km of the breeding colony (Weimerskirch et al. 2008).

There are no BIAs for this species in the NWMR.

Common noddy (pelagic seabird)

The common (or brown) noddy (*Anous stolidus*) is listed as migratory under the EPBC Act and BC Act. The species is widespread in tropical and subtropical areas within and beyond Australia. This seabird species is gregarious and normally occurs in flocks, up to hundreds of individuals, when feeding or roosting.

The Houtman Abrolhos is the primary breeding habitat for the common noddy in the Eastern Indian Ocean, although breeding occurs across offshore islands of the NWMR, albeit in fewer numbers, including Bedout Island, Montebello Islands and Fazer Island (Johnstone et al*.,* 2013), and Ashmore Reef (Clark & Herrod, 2016). Breeding at Ashmore Reef has been recorded as occurring between April and November (Clark & Herrod, 2016).

During breeding, individuals nesting on Lancelin Island in the SWMR were found to forage diurnally (Shephard et al 2018). Tracked individuals travelled an average of 97 km from the colony with an average trip distance of 141 km, with significantly longer trips during chick rearing compared to incubation (Shephard et al*.,* 2018).

The species is highly pelagic outside breeding (March to August), with breeding individuals of the Houtman Abrolhos Islands travelling ~950 km north to the NWMR (Surman et al*.,* 2017). The species is often reported roosting on unmanned oil and gas platforms within the NWS and Timor Sea (Surman pers comm, 2021).

Although widespread across the NWMR during breeding and non-breeding, no BIAs for this species are located in the NWMR.

Bridled tern (pelagic seabird)

The bridled tern (*Onychiprion anaethetus* (listed as *Sterna anaethetus*) is listed migratory under the EPBC Act and BC Act. It is a common summer breeding visitor to the NWMR between September and April, especially around Dampier Archipelago and the Montebello Islands (Johnstone et al 2013). Breeding has also been reported on the Lowendal Islands (Nicholson 2002), Passage Islands and islands off Onslow from November–March (Johnstone et al 2013). Small breeding populations have also been recorded on East Island at Ashmore Reef between April-November and the Lacapede Islands (Clarke and Herrod 2016; Johnstone and Storr, 1998).

The migration and local movements of breeding birds within the NWMR are poorly defined; two individuals were tracked departing the Houtman Abrolhos islands in April/May, transiting along the continental shelf waters before departing Australian waters and migrating towards the Western Celebes Sea, east of Borneo (Surman et al., 2018). These individuals departed the Western Celebes Sea in August/September returning to the Houtman Abrolhos islands around 14 days later (Surman et al., 2018). This species has been regularly recorded on the continental shelf up to 70 km away from breeding locations during oceanic surveys (Surman and Nicholson, 2011; Dunlop et al., 2001).

Bridled terns feed diurnally on a range of species of fish, crustaceans, cephalopods and insects. In Australia, they feed almost entirely on fish, though they also take crustaceans and aquatic insects. They often feed on schools of fish forced to the surface by other predators (Dunlop, 1997). Bridled Terns forage mainly by contact dipping, with birds hovering or gliding close to the surface of the sea and swooping down and immersing only the head and breast when attacking prey, which are usually taken from the top few centimetres of the sea surface (<20 cm) (Dunlop, 1997).

During breeding at Penguin Island, WA, individuals foraged most commonly between 20 km and 40 km from the nearest breeding colony, though some were observed at distances up to 80 km (Dunlop, 1997). This species has also been recorded within 70 km of their breeding colonies within the NWMR, on outer continental shelf waters (Nicholson 2002; Dunlop et al. 2001).

Although foraging may be concentrated around breeding colonies during the breeding season, no BIAs in the NWMR have been identified for this species.

Frigate birds (pelagic seabirds)

The lesser (*Fregata ariel*) and great frigatebirds (*Fregata minor*) are both listed migratory under the EBPC Act and BC Act. They are the most widely distributed of the frigatebirds, with a pan-tropical distribution.

In the NWMR, the great frigatebird nests at Ashmore Reef and Adele Island. At Ashmore Reef they are found to breed year-round (Clark & Herrod, 2016). In addition to the Ashmore Reef and Adele Island, the lesser frigatebird also nests at Cartier Island, the Lacepede Islands and Bedout Island, which is thought to support more than 1% of the world's breeding population (BirdLife International 2021). On Ashmore Reef, the species breed in the Austral winter (Clark & Herrod, 2016).

During breeding, great frigatebirds breeding in the South China Sea on average foraged 75 km (maximum 150 km) from their breeding colony and lesser frigatebirds 123 km (maximum 300 km) (Mott et al*.,* 2017).

Outside of breeding, frigatebirds may disperse significant distances from their breeding colonies (Mott et al*.,* 2017). Great frigatebirds are wide ranging, being recorded between 900-1400 km from their natal colonies (Dunlop et al*.,* 2001). Tracking studies of non-breeding lesser and great frigatebirds roosting on Ashmore Reef and Adele Island demonstrated that individuals have large distributions including Australian coastal waters and in addition to the South China, Java and Sulu Seas and the Gulf of Thailand (Mott et al*.,* 2021). During the wet season in particular, Australian waters provided optimal habitat for non-breeding individuals of both species. (Mott et al*.,* 2021).

Both frigatebirds forage by snatching prey from the surface waters, or when prey break the surface. They also rely heavily upon kleptoparasitism, harrying other seabirds returning to their colonies with food until it is regurgitated. Frigatebirds are susceptible to waterlogging, so do not plunge or splash dive for prey nor do they roost on the seas surface. Across the NWMR they forage on flying fish, cephalopods, anchovies, northern pilchards and other medium sized prey (8-30 cm, Surman pers. Obs.).

Breeding/foraging BIAs for the great frigatebird in the NWMR are associated with breeding colonies on Ashmore Reef and Adele Island. For the lesser frigatebird, breeding/foraging BIAs are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (**Figure 8-4** Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)).

White-tailed tropicbird (pelagic seabird)

The white-tailed tropicbird (*Phaethon lepturus*) is listed migratory under the EBC Act and BC Act. The species breeds across many sites, but in low numbers (Commonwealth of Australia, 2020). In Australia, between 6,000 and 12,000 pairs nest on Christmas Island, with smaller fragmented populations at North Keeling Island (40 pairs). These individuals are expected to be members of the Christmas Island white-tailed tropicbird sub species *Phaethon lepturus fulvus*. While individuals of this subspecies can forage at great distances from colonies (see below), the numbers occurring in the NWMR are expected to be low.

In the NWMR, the white-tailed tropicbird is known to nest on Ashmore Reef and the Rowley Shoals, (10 breeding pairs, Clark 2010 and up to three nesting pairs Burbidge et al. 1996, respectively). Breeding can occur year-round (Clarke & Herrod, 2016).

Pennycuick et al. (1990) demonstrated that the white-tailed tropicbirds breeding in Puerto Rico foraged up to 89 km from the nest site when breeding and moved considerably larger distances when not breeding. Dunlop et al. (2001) observed birds from Christmas Island foraging singly between 1400-1600 km SE of Christmas Island.

This species regularly roosts on the seas surface, in between bouts of foraging. It is a solitary forager, rarely feeding in association with other seabird species and always in waters favourable for its principal prey, flying fish (Santos et al*.,* 2018). The species is a surface forager that occasionally undertakes shallow dives (Marchant & Higgins 1990).

There are breeding BIAs associated with nesting occurring at the Rowley Shoals and Ashmore Reef within the NWMR (

Figure 8-5).

Red-tailed tropicbird (pelagic seabird)

The red-tailed tropic bird is listed as Endangered (since December 2023) under the EPBC Act and 'Priority 4' under the BC Act.

Across the NWMR, the largest population breeds on Christmas Island (1,400 - 2,000 pairs, references within Sommerfeld et al., 2015) with additional key breeding locations on Cocos (Keeling) Group and islands of Ashmore Reef Marine Park (17-24 breeding pairs, Clarke et al., 2011; Clarke and Herrod, 2016). At Ashmore Reef, breeding pairs were observed year-round, with no discernible peak in breeding activity (Clarke et al., 2011).

The red-tailed tropicbird is a shallow diving species typically foraging diurnally within the first 4 m of the water column (LeCorre 1997). There is limited information concerning foraging range when breeding in Australia, but observations at sea in the Ashmore Reef region demonstrate they are capable of foraging considerable distances from land (unpubl. Data, Clarke, 2010). This corroborates data from elsewhere in their global range which reported foraging distances of 240 km during incubation, 109 km during chick rearing and maximum distances of 380 km (Fayat et al., 2023). This species has been observed during boat surveys of the outer shelf of the NWMR year-round (Surman and Nicholson 2011).

There are no BIAs for this species within the NWMR.

Australian Fairy Tern (nearshore seabird)

The Australian fairy tern (*Sternula nereis nereis*) is listed vulnerable under the EPBC Act. The WA breeding population (approximately 5000-6000 mature individuals) is dispersed over approximately 2500km of coastline (Greenwell, 2021). Within Western Australia, the subspecies comprises a sedentary Pilbara population and a partially-migratory population extending from Exmouth to Point Malcolm. Individuals of the partially-migratory population may occasionally migrate into the southern region of the NWMR during the winter months.

Within the NWMR breeding occurs in small colonies between June-September on offshore islands, including Simpson Island, Barrow Island, the Montebello Islands, the Lowendal Islands, Thevenard Island, Serrurier Island, the islands in the Dampier Archipelago, Maryanne Shoals and Egret Island (Dunlop 2018; Johnstone et al 2013; Surman pers. Obs.). Colonies tend to occupy areas rather than fixed sites, and nest sites can be abandoned after one or more years, even if they have been successful (Saunders and de Rebeira, 1985).

While information regarding foraging ecology of this species within the NWMR is lacking, the Australian fairy tern has been studied in South Australia. Here, species typically forages in inshore waters and has been reported to rarely travel beyond 2 km during the breeding season in South Australia (Paton and Rogers 2009).

Australian fairy terns are diurnal plunge diving seabirds, feeding exclusively on small (<60 mm) surface schooling bait fishes throughout their range. Prey include species of sprats, hardy heads and larval prey of some demersal fish species. Unlike many other terns, fairy terns are not dependent upon large pelagic fishes to drive their prey to the surface.

Breeding and foraging BIAs are identified for the fairy tern in the NWMR, as presented in **Figure 8-2**.

Little tern (nearshore seabird)

The little tern (*Sternula albifrons*) is listed migratory under the EPBC Act and BC Act. There are three sub-populations of little tern in Australia and two of these occurring in the NWMR: the northern Australian breeding subpopulation occurring around Broome and extending across the NWMR to Cape York, and an east Asian breeding subpopulation, with the terns present from Shark Bay to south-eastern Queensland during the Austral summer.

Recent surveys have found that little terns breed across the NWMR in small colonies (Surman pers. obs.). However, identification between subpopulations is difficult, and population estimates have high error due to the overlapping range and remote breeding sites of the northern populations. A southwards movement of breeding distribution has been noted at three key locations; Lowendal Islands (Surman pers comm.), Burrup Peninsula (Nicholson pers comm.), and North-west Cape (Greenwell and Dunlop 2021). Little terns usually forage close to their breeding colonies, typically within 5 km (Bertolero et al*.,* 2005) mainly on small fish (< 10 cm in length), but they also eat crustaceans, insects, annelids and molluscs.

Little is known about the breeding and foraging ecology of little terns, however BIAs for foraging and resting have been identified across the NWMR (**Figure 8-2**), with a peak in breeding activity between June and October.

Roseate tern (nearshore seabird)

The roseate tern (*Sterna dougallii*) is listed migratory under the EPBC Act and BC Act. This species is generally sub-tropical in distribution and there are many breeding populations in the NWMR, including Ashmore Reef, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands.

The largest roseate tern breeding colony in Western Australia is in the Houtman Abrolhos Islands (Surman & Nicholson, 2009). Large colonies breed within the Lowendal Island and Montebello Island region where there is a stronghold for this species (Higgins & Davies 1996). A large breeding colony has also been recorded on Goodwyn Island on the Dampier Archipelago (Higgins & Davies 1996). Peak breeding times across the NWMR are between May to August.

Birds are known to usually move away from breeding colonies following breeding, but their non-breeding range is not well defined (Higgins & Davies 1996). Many non-breeding roseate terns have been observed at several remote locations in the Kimberley and there are high numbers also recorded at the Eighty Mile Beach Ramsar site (Surman pers obs).

Roseate terns will forage diurnally, up to 60 km from their colonies and always over deeper shelf waters, rather than shallow coastal areas (Surman & Wooller, 2003). Roseate terns will also readily raft (roost in flocks on the sea surface) after foraging episodes (Commonwealth of Australia, 2020).

Roseate terns predominately eat small pelagic fish taken by plunge diving or surface dipping, typically foraging in dense flocks overflying predatory fishes that push their prey to the surface. Roseate terns may plunge to 20 cm depth.

Breeding BIAs across the NWMR are associated with known breeding colonies on islands, while a resting BIA encompasses Eighty Mile Beach (**Figure 8-2**).

Caspian tern

The Caspian tern (*Hydroprogne caspia*) is listed migratory under the EPBC Act and BC Act. It is moderately common across coastlines of the NWMR and offshore islands (Johnstone et al*.,* 2013).

Breeding occurs as solitary nests or in colonies of up to 52 breeding pairs mainly on islands, including North Turtle Island, Dampier Archipelago including Enderby Island, and Frazer Island, and occasionally on mainland coasts, such as Cape Preston and the Northwest Cape, from late March to early November (Johnstone et al*.,* 2013).

During breeding, adults can forage up to 60 km from the colony during this period to catch fish and meet their elevated energetic requirements at this time (Burger et al. 1996; Balance et al*.,* 2008). The Caspian tern is a diurnal forager, with the length and frequency of foraging trips, as well as relative time spent foraging or attending chicks, changing with food resource availability (Dunlop & McNeill 2017).

Caspian tern usually forage in shallow, sheltered waters, by plunge-diving for various prey species (Serventy et al*.,* 1971).

Although foraging BIAs occur in the SWMR, no BIAs for this species have been identified in the NWMR.

Greater crested tern

The greater crested tern (*Thalasseus bergii*) is listed migratory under the EPBC Act and BC Act. The species is widespread along coastlines of the NWMR and offshore islands (Johnstone et al*.,* 2013).

Many populations remain sedentary in their breeding areas or disperse locally (del Hoyo et al*.,* 1996), although some are more migratory (Urban et al*.,* 1986). The species breeds in large, dense colonies, or in small groups of fewer than ten pairs amidst colonies of other species, such as silver gull (del Hoyo et al. 1996). Colonies are located on islands, including those as far offshore as Bedout, Legendre and the Montebello and Lowendal Islands (Johnstone et al*.,* 2013). Adult breeders have shown both high site fidelity and also flexibility in their breeding localities depending upon the spatial and temporal reliability of food resources (Crawford et al*.,* 2002).

Breeding occurs from late March to May (Johnstone et al*.,* 2013). During breeding, greater crested terns conduct short, diurnal foraging trips close (<40 km) to the colony (Surman & Wooller 2003, Rock et al. 2007; McLeay et al*.,* 2010) with most foraging behaviour displayed by individuals at distances >5 km (McLeay et al*.,* 2010).

The chicks are predominantly fed pelagic fish, a diet that varies among colonies and years (Chiaradia et al*.,* 2002; McLeay et al*.,* 2009). Adults may forage more widely on inshore reef fish (Surman & Wooller, 2003), crustaceans and cephalopods using a plunge diving method (Commonwealth of Australia, 2020a).

Although there is known habitat use in the NWMR, there are no designated BIAs for the greater crested tern in the NWMR.

8.2.1 Moderate occurrence seabird species

Species descriptions for moderate occurrence key pelagic and nearshore seabird species are summarised in **Table 8-2.**

Table 8-2 Species summary for moderate occurrence pelagic and nearshore seabird species within the NWMR.

Species	NMWR presence	Predominant feeding behaviour	Diet
Amsterdam albatross	Year-round low-density presence associated with foraging breeding and non-breeding individuals	Diurnal and nocturnal Dipping, surface seizing, diving to depths ≥2 m	Squid, fish and crustaceans
Flesh-footed shearwater	Non-breeding, migration: Jun – Aug	Diurnal and nocturnal Pursuit-plunging, surface-seizing	Fish, cephalopods
Soft-plumaged petrel	Non-breeding, migration: Jan-June	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Streaked shearwater	Non-breeding: Dec – Apr	Diurnal and nocturnal Surface-seizing	Fish, squid, crustacean
Wilson's storm petrel	Non-breeding: June – Dec	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Common tern	Non-breeding: Aug – Mar	Diurnal	Fish

		Surface-plunging, dipping.	

8.2.2 Biologically Important Areas for seabirds in the NWMR

A review of the Australian Marine Spatial Information System (GA, 2024) identified BIAs representing important life cycle stages and behaviours for nine species of seabird in the NWMR. These are presented in **Table 8-3**.

Table 8-3 Seabird BIAs within the NWMR (source: AMSIS, 2024 [accessed on 12/08/24]

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
Australia fairy tern	-	✓	✓	-	No foraging BIAs in the NWMR Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and Bernier Island of Shark Bay	-
Wedge-tailed shearwater	✓	✓	✓	Widespread area of the NWMR offshore and inshore waters	Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	-	-
Great frigatebird	✓	-	-	Ashmore Reef, Adele Island	-	-	-
Lesser frigatebird	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Brown booby	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Red-footed booby	✓	-	-	Adele Island, Ashmore Reef	-	-	-
Little tern	✓	✓	-	Rowley Shoals, Adele Island	-	-	-
Roseate tern	✓	✓	✓	-	No foraging BIAs in the NWMR Foraging (provisioning young) and foraging BIAs located in the SWMR – Houtman Abrolhos Islands the	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	Eighty Mile Beach

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
					nearest BIA to the NWMR		
White-tailed tropicbird	✓	✓	-			Rowley Shoals Ashmore Reef	

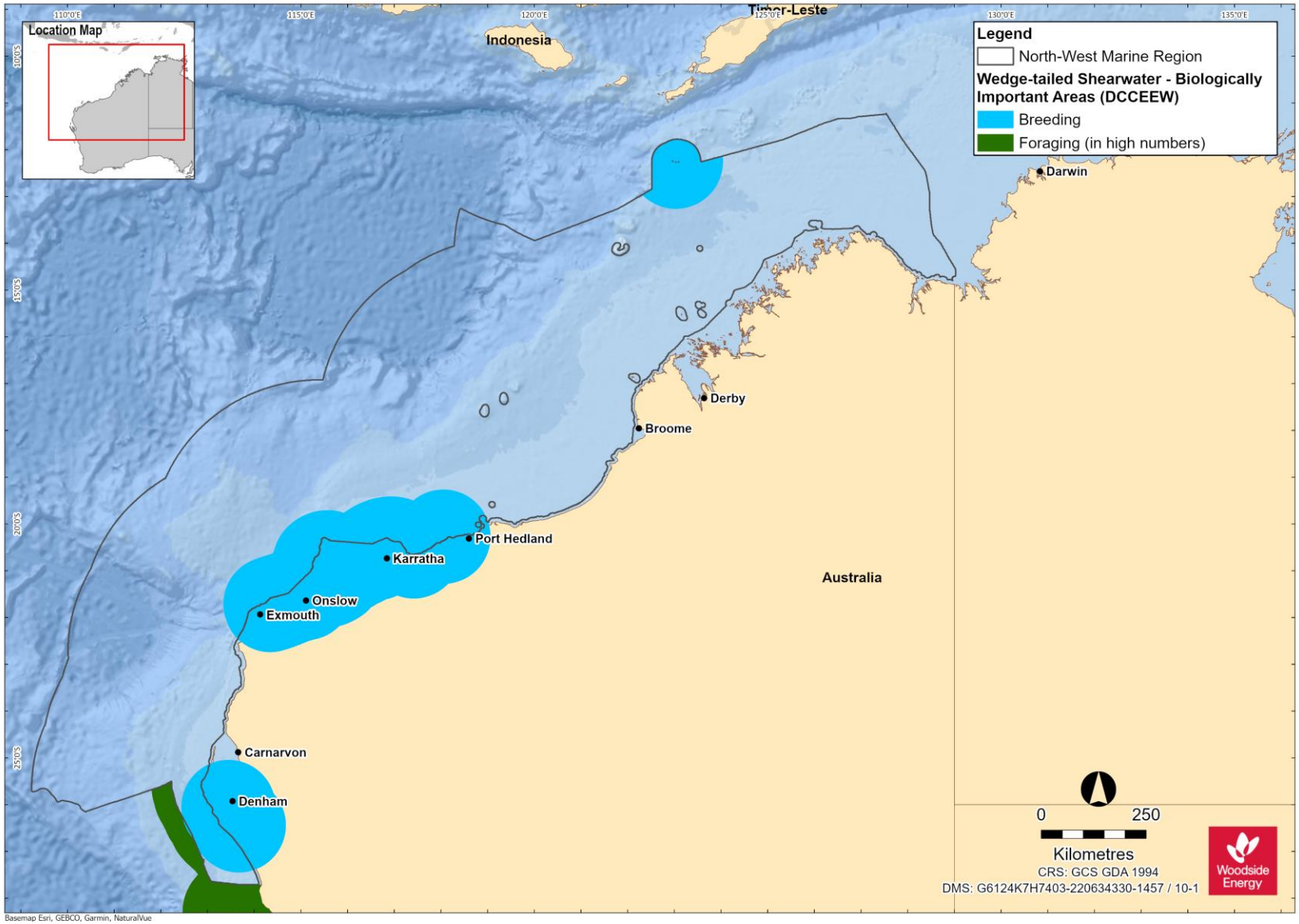


Figure 8-1 Wedge-tailed shearwater BIAs for the NWMR (data source: DCCEEW, 2024b)

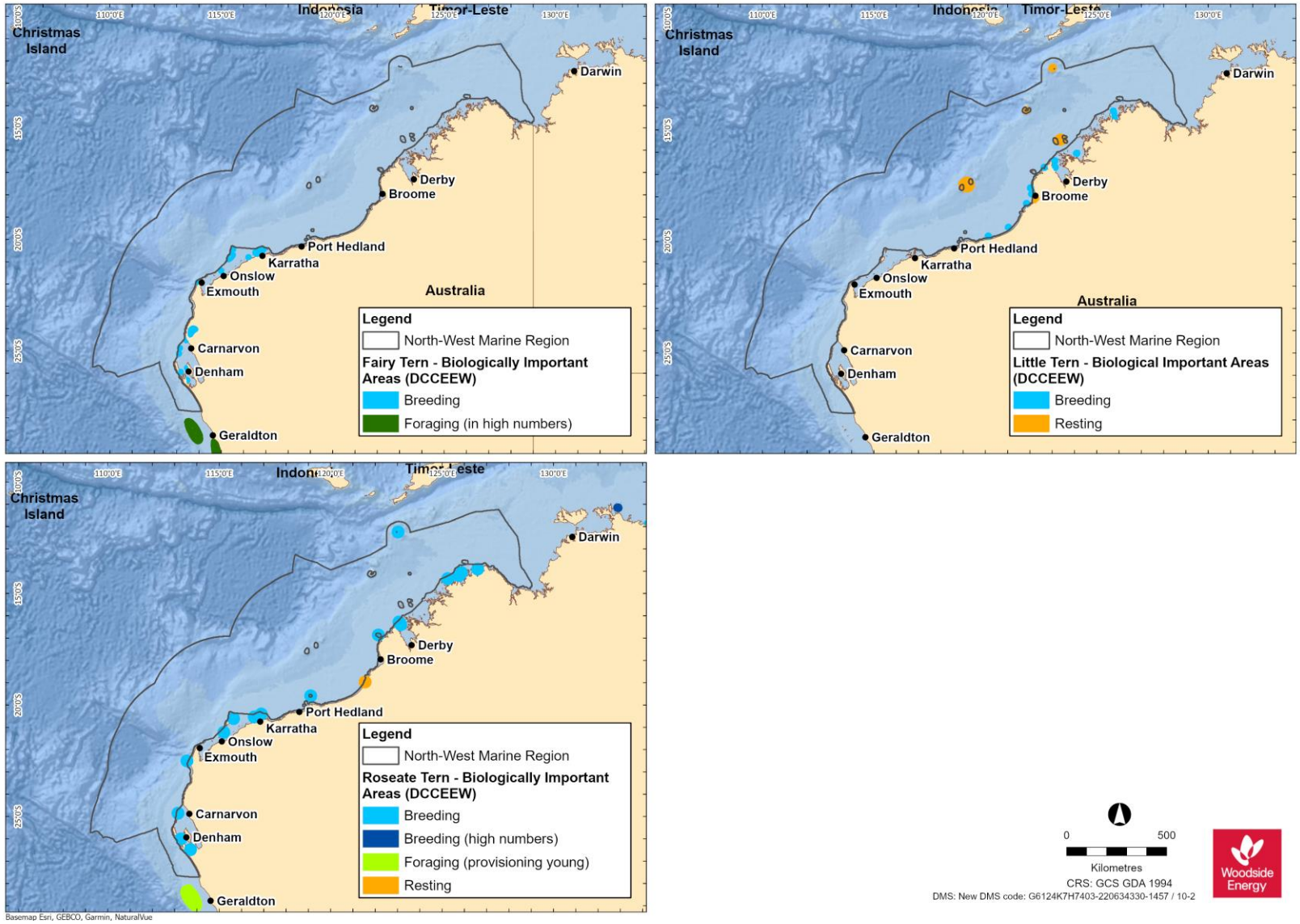


Figure 8-2 Tern species BIAs for the NWMR (data source: DCCEEW, 2024b)

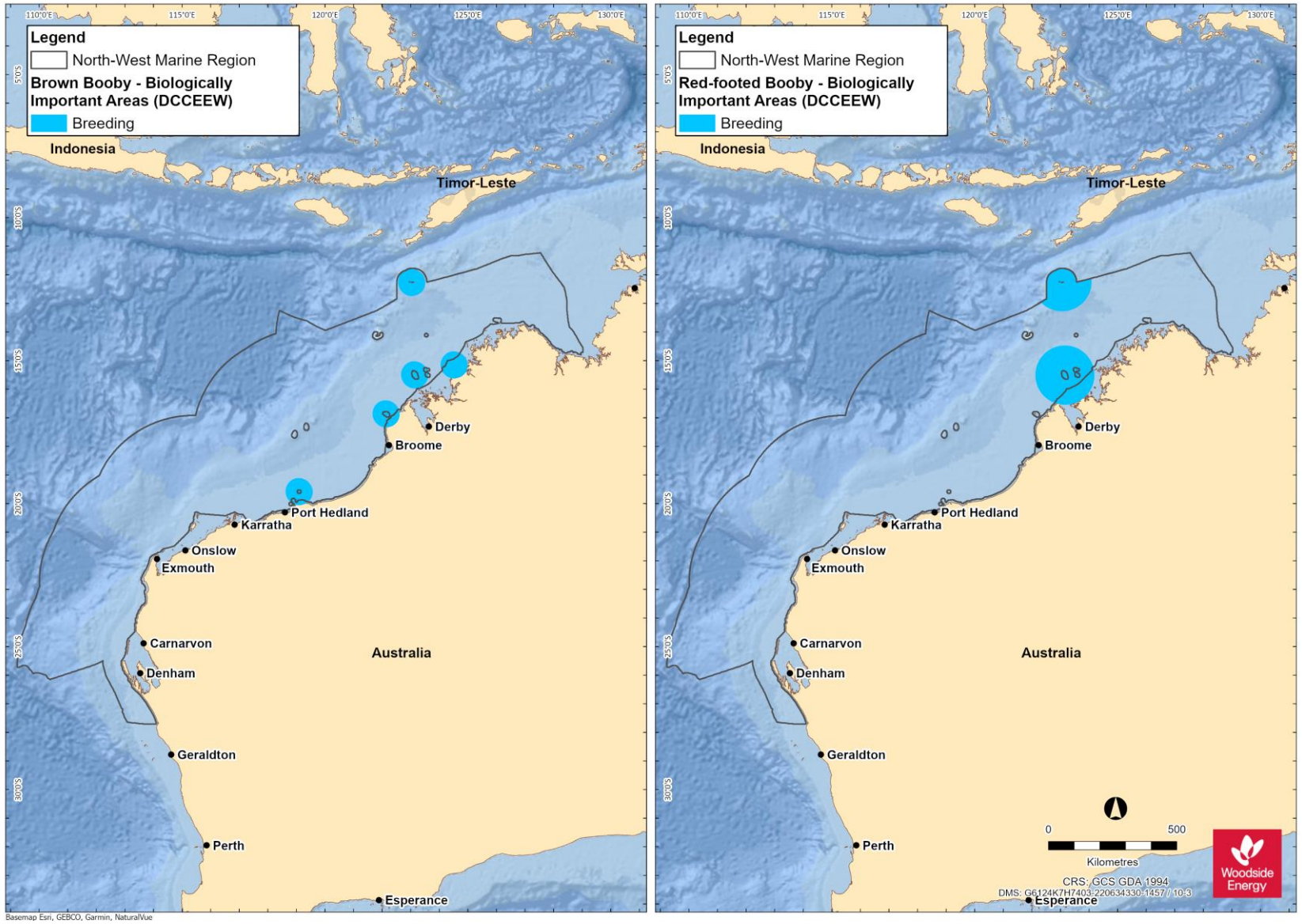


Figure 8-3 Red-footed and brown booby BIAs for the NWMR (data source: DCCEEW, 2024b)

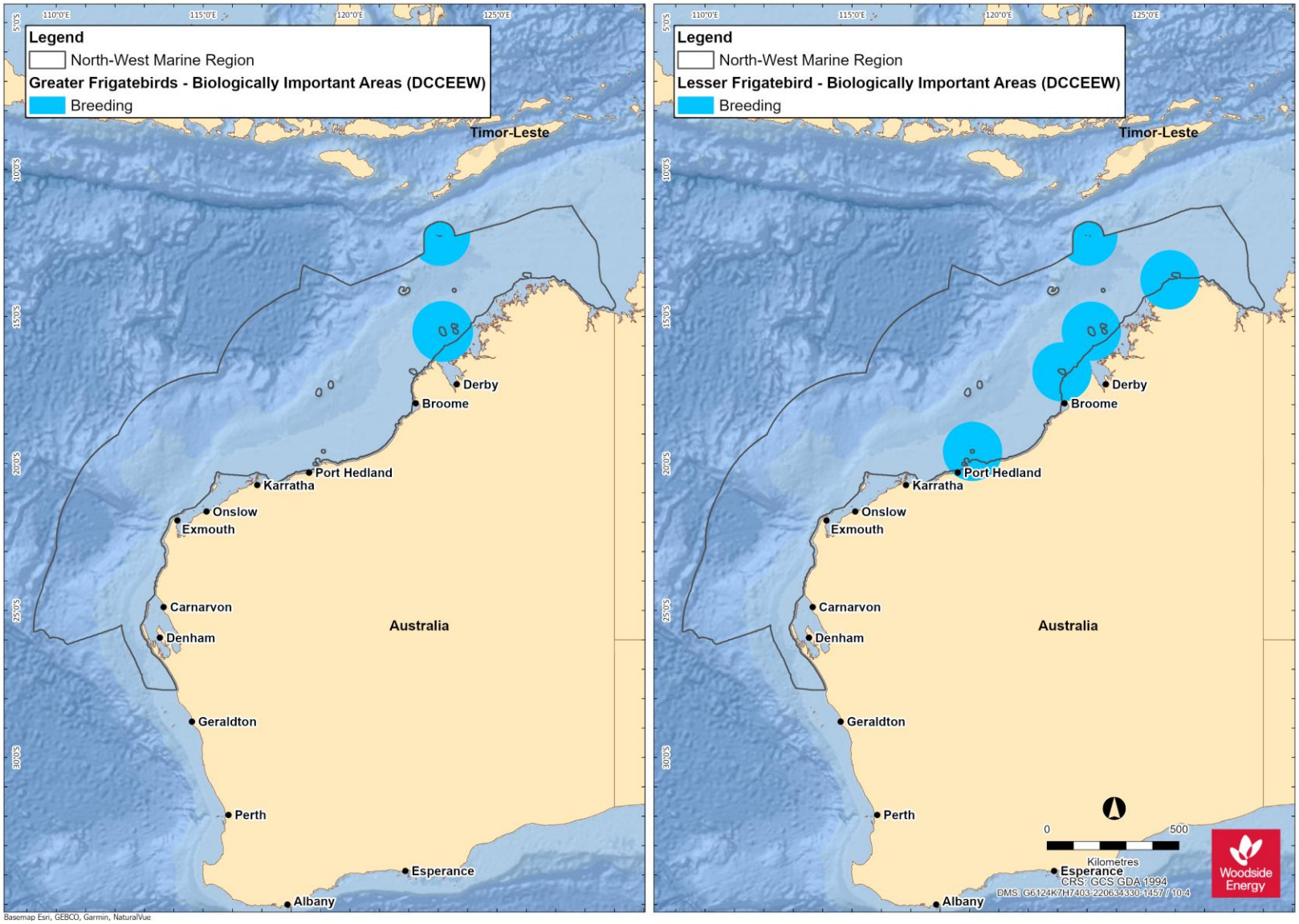


Figure 8-4 Greater and lesser frigatebird BIAs for the NWMR (data source: DCCEEW, 2024b)

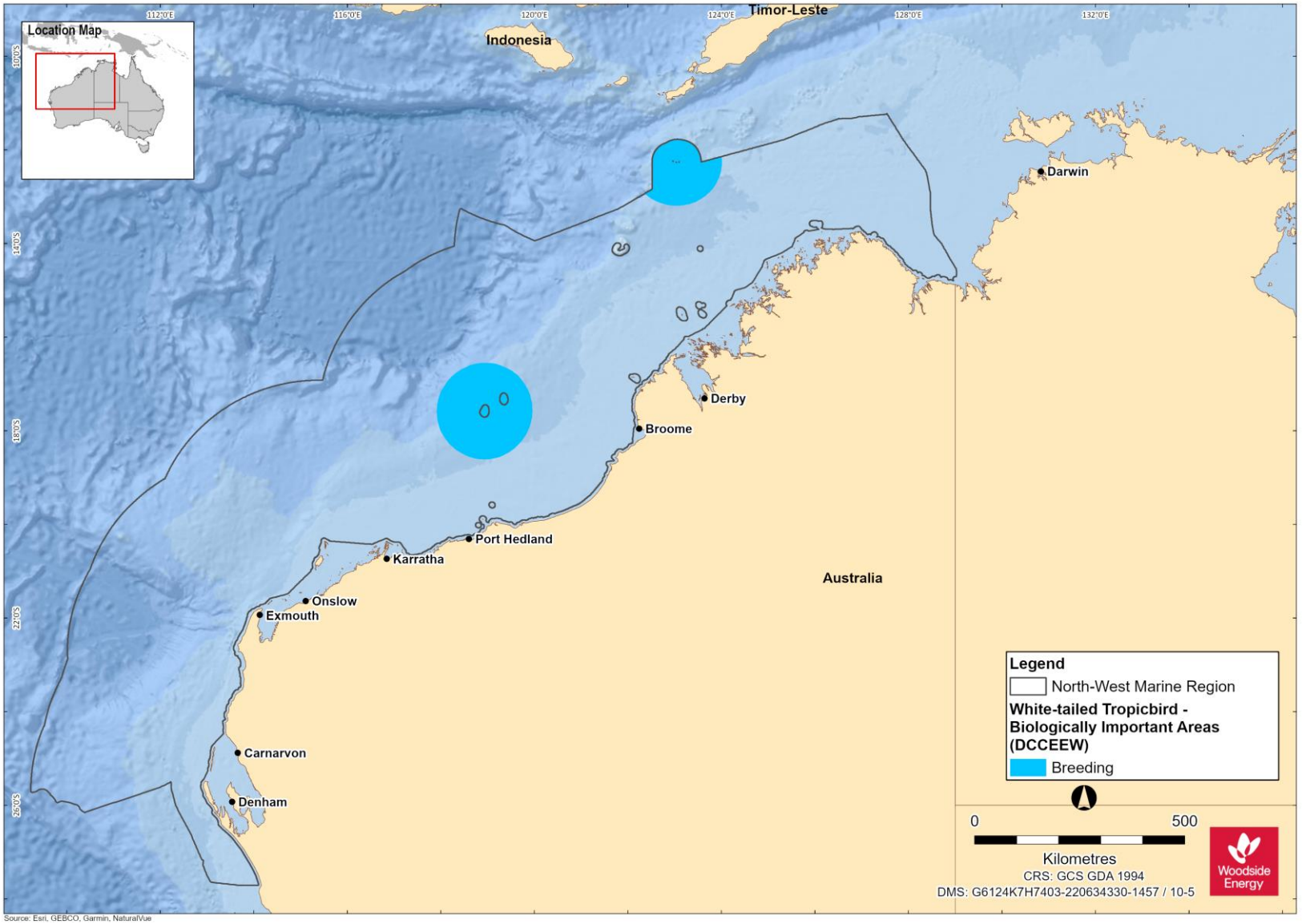


Figure 8-5 White-tailed tropicbird BIAs for the NWMR (data source: DCCEEW, 2024b)

8.2.3 Seabird Summary for NWMR

8.2.3.1 Browse

The Browse activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- great and lesser frigatebirds (breeding/foraging);
- brown booby (breeding/foraging);
- red-footed booby (breeding/foraging);
- little tern (breeding/foraging);
- roseate tern (breeding and resting); and,
- white-tailed tropicbird (breeding).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.3.2 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging);
- lesser frigatebird (breeding/foraging);
- brown booby (breeding/foraging);
- white-tailed tropicbird (breeding);
- little tern (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.3.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for three threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are listed and described in **Table 8-3**.

8.3 Shorebirds

Shorebirds (migratory and resident species) are generally associated with wetland or coastal environments, and the NWMR hosts many shorebird species, particularly in the Austral summer (refer to **APPENDIX A. Protected Matter Search Reports for NWMR, SWMR and** NMR for the EPBC Act PMST reports on listed species of shorebirds). Shorebirds may use coastal environments for feeding, nesting or migratory stopovers. In coastal environments, shorebirds generally feed

during low tide on exposed intertidal mud and sand flats, and roost in suitable habitat above the high-water mark.

The NWMR is situated within the East Asian – Australian Flyway (EAAF), a geographic region supporting populations of migratory shorebirds throughout their annual cycle. The EAAF extends from breeding grounds in the Russian tundra, Mongolia and Alaska southwards through east and south-east Asia, to non-breeding areas of Indonesia, Papua New Guinea, Australia and New Zealand (Weller and Lee, 2017). All shorebird species identified undertake annual migrations from breeding sites in the northern hemisphere to more southern non-breeding sites within the EAAF (Bamford et al 2008).

The EAAF encompasses a large proportion of the NWMR. Migratory shorebirds may migrate through the offshore areas of the NWMR between overwinter grounds in Australia and breeding sites in the northern hemisphere (Bamford et al. 2008). Peak migration occurs between March and May (northern migration) and August and November (southern migration) (Bamford et al. 2008). Migration routes of some migratory shorebird species have been characterised using band recoveries (Minton et al 2006), however the migration pathways taken between sightings are poorly understood.

Migratory shorebird species are present in Australia during the non-breeding period (December to February), in coastal and inland habitats where adult birds build up the energy reserves necessary to support northward migration and subsequent breeding (Commonwealth of Australia, 2015c). During this time, individuals must maintain an energy intake greater than their energy expenditure to recover from the southward migration, to allow moulting, and to build fat reserves in preparation for the northward migration (Commonwealth of Australia, 2015c). The high energy demands of migration means that both foraging and resting during the non-breeding period are vital for individual fitness and survival.

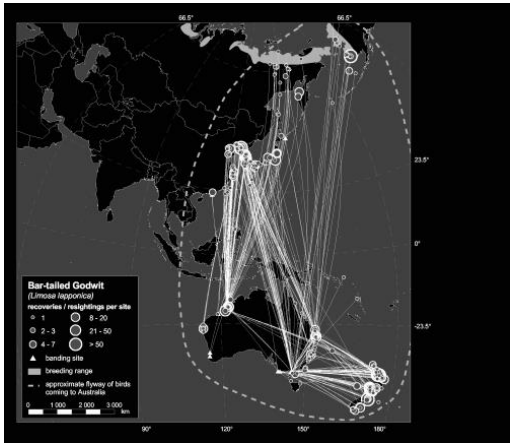
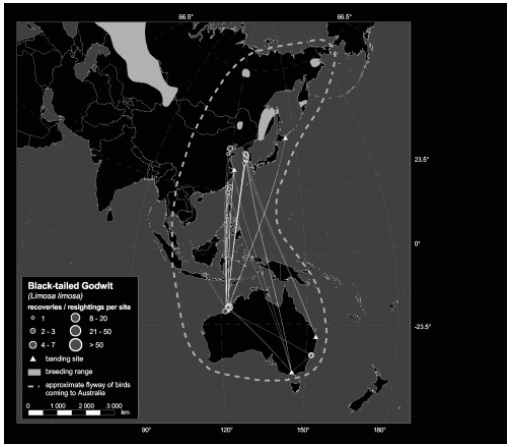
Due to differences in coastal or wetland habitat requirements between roosting and foraging behaviours, areas used most by migratory shorebirds usually comprise networks of foraging and roosting habitats. Shorebirds move between areas of this network depending on the time of day, availability of resources, levels of disturbance and environmental conditions (Commonwealth of Australia, 2015c). Displacement from one habitat or the other may result in utilisation of sub-optimal habitat and/or increase energetic demands via increased distance between habitats.

Within the EAAF, “a wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird” (Ramsar Convention Bureau, 2000). All shorebirds identified as high occurrence key species occur in shoreline habitats within the NWMR for at least part of their non-breeding season in Australia.

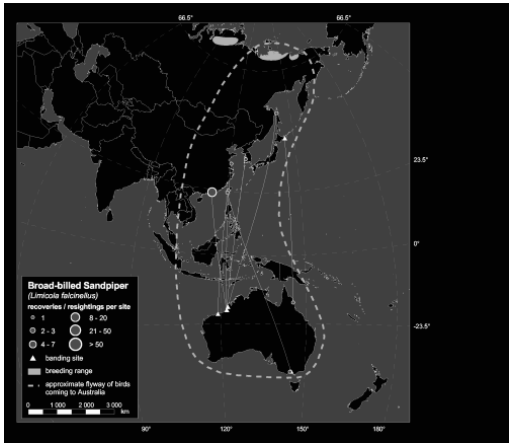
Ashmore Reef is documented as a BIA for migratory shorebirds in the NWMR (DSEWPAC, 2012a).

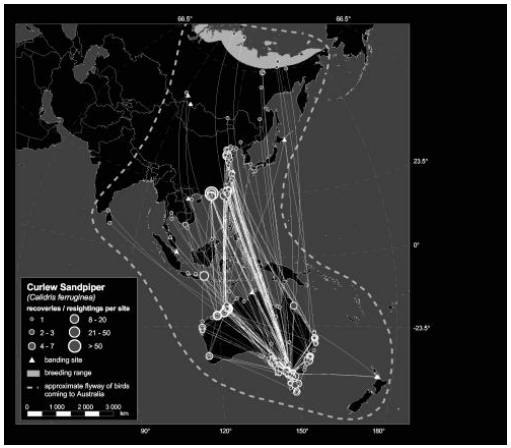
Species descriptions, including information on migration routes where available, for key high and moderate occurrence shorebird species are provided in **Table 8-4** and **Table 8-5**. It should be noted that Minton et al*.,* (2006) did not report on the Pilbara region or Exmouth Gulf, so the migratory pathways may be incompletely depicted.

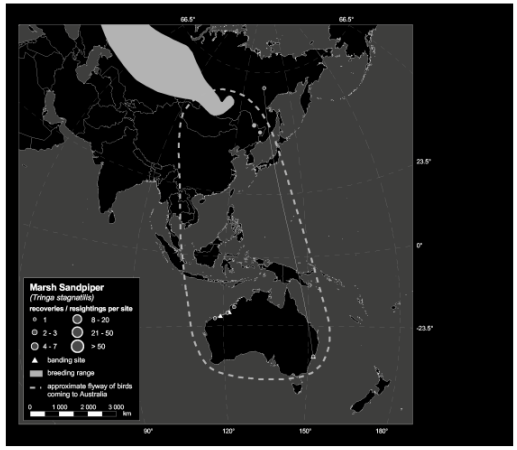
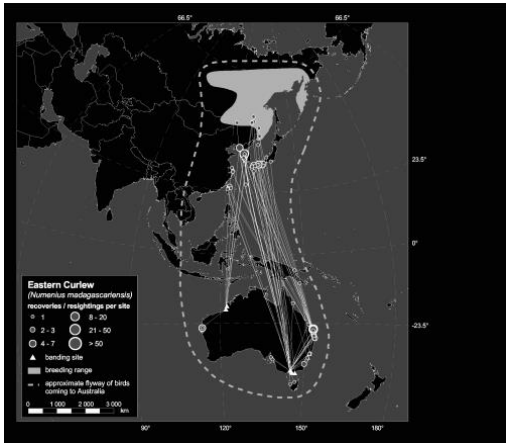
Table 8-4 Species summary for high and selected moderate occurrence key shorebird species.

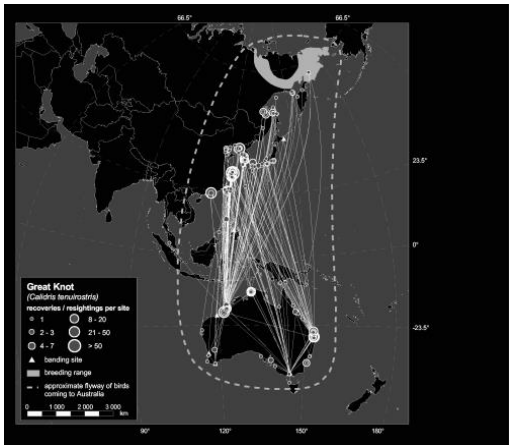
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Bar-tailed godwit[21]	Widespread around the coast as far east as Derby, with a few scattered records elsewhere in the Kimberley *Internationally important site:* • Roebuck Bay • Eighty Mile Beach	Sandy beaches, sandbars, spits and also in near-coastal saltmarsh	Tidal estuaries and harbours	Worms, molluscs, crustaceans, insects and some plant material	
Black-tailed godwit	Found in coastal regions of all States and Territories of Australia *Internationally important site:* • Roebuck Bay	Claypan	Intertidal mudflats or sandflats	Annelids, crustaceans, arachnids, fish eggs and spawn and tadpoles	

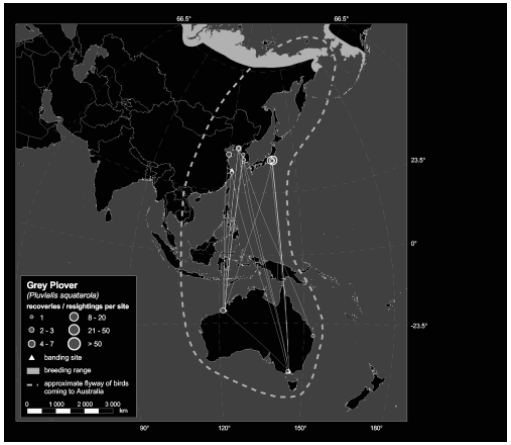
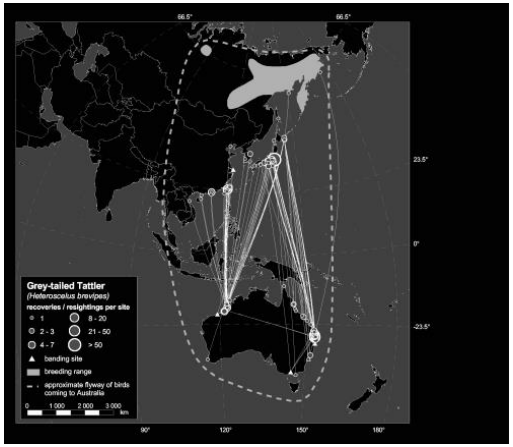
[21] Nominate species *Limosa lapponica.* Subspecies which may occur includes *L. l menzbieri,* which is listed Critically Endangered under the EPBC Act. Specific information on *L. l menzbieri* is lacking, but information regarding habitat use and diet for the nominate species is considered applicable.

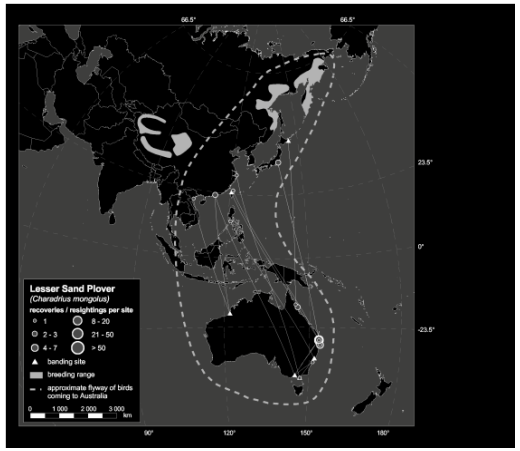
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Broad billed sand piper	Regular visitor to coasts of the Pilbara and Kimberley between Onslow and Broome *Internationally important site:* • Port Hedland Saltworks	Sheltered sandy, shelly or shingly beaches	Mudflats, mangroves	Worms, including polychaetes, molluscs, crustaceans, insects and seeds	
Common redshank	Records in the Gascoyne region, Coral Bay and Carnarvon Widespread from the Dampier Saltworks to Roebuck Bay and Broome Ashmore Reef	Sheltered coastal wetlands such as bays, river estuaries, lagoons, inlets and saltmarsh	Bare mud or sand, or on algal deposits, round the edges of wetlands	Worms, molluscs, crustaceans, arachnids and insects	Not available

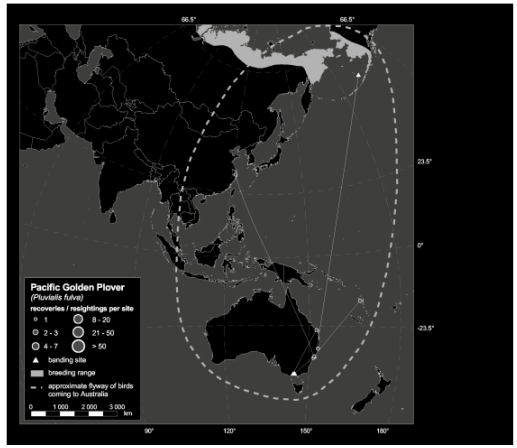
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Curlew sandpiper	Widespread around coastal and subcoastal plains Non-breeding one year old birds may remain in Australia rather than migrating north *Internationally important site:* • Dampier Saltworks • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands	Mudflats and nearby shallow water	Worms, molluscs, crustaceans, and insects, as well as seeds	

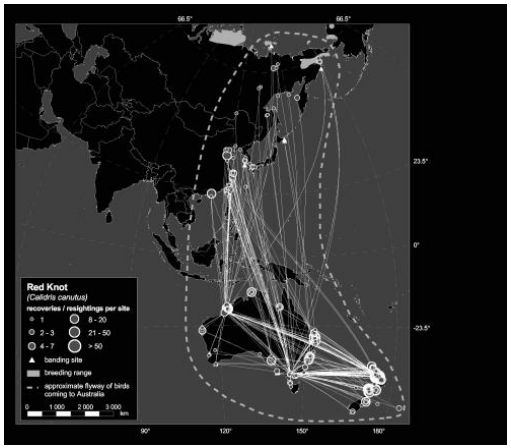
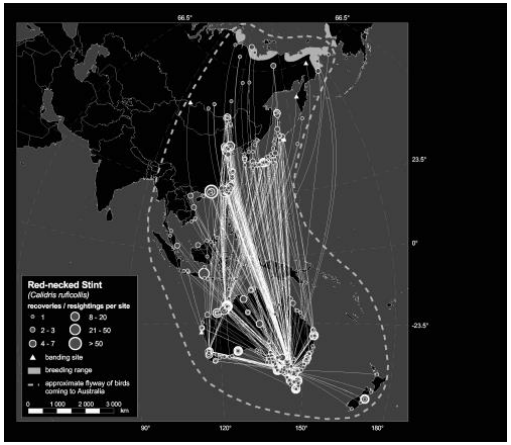
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Marsh sandpiper	Widespread, notable areas include Eighty Mile Beach, Port Hedland Saltworks	Tidal mudflats	Mudflats, marshy vegetation	Molluscs, crustaceans and insects	
Eastern curlew	Continuous distribution from Barrow Island and Dampier Archipelago through the Kimberley region *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy spits, sandbars and islets, beaches near the high-water mark, coastal vegetation including low saltmarsh or mangroves	Soft sheltered intertidal sandflats or mudflats, saltflats and saltmarsh, in proximity to mangroves, among rubble on coral reefs, and beaches near the tideline	Crustaceans small molluscs, insects	

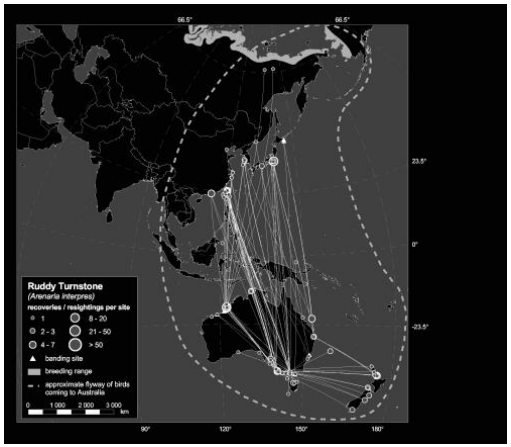
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Great knot	Common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Roosts in large groups in open areas, often at the water's edge or in shallow water close to feeding grounds	Sheltered coastal habitats with large intertidal mudflats or sandflats	Bivalves, gastropods, crustaceans and other invertebrates	
Greater sand plover	Widespread between North-west Cape and Roebuck Bay *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sand-spits and banks on beaches or in tidal lagoons	Surface of wet sand or mud on open intertidal flats of sheltered embayments, lagoons or estuaries	Molluscs, worms, crustaceans and insects	

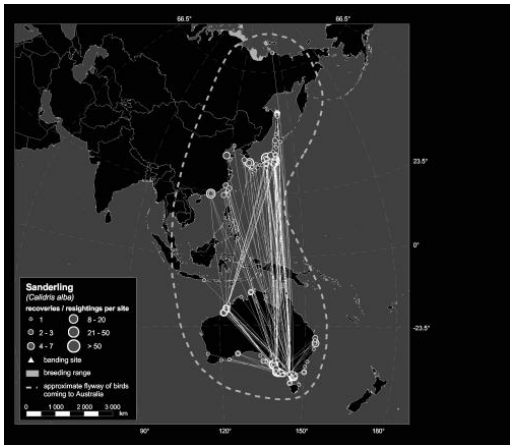
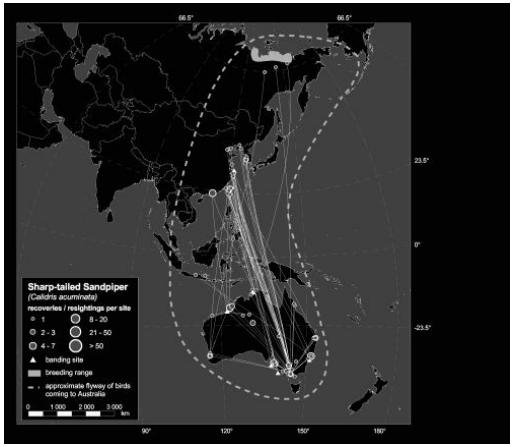
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Grey plover	Widespread in coastal areas across Australia *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy habitats including unvegetated sandbanks or sand-spits, sheltered beaches, estuaries or lagoons	Large areas of exposed mudflats and beaches of sheltered coastal shores	Molluscs, insects and their larvae, crustaceans and polychaete worms	
Grey-tailed tattler	Widespread from Houtman Abrolhos and the mainland adjacent to the Kimberley *Internationally important site:* • Barrow Island • Roebuck Bay • Eighty Mile Beach • Lacepede Islands	Branches of mangroves, snags or driftwood	Shallow water on hard intertidal substrates, such as reefs and rock platforms, in rock pools and among rocks and coral rubble	Polychaetes, molluscs, crustaceans, insects and, occasionally, fish	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Lesser Sand Plover	Widespread, internationally important site: • Eighty Mile Beach • Roebuck Bay • Broome • Port Hedland Saltworks	Beaches, banks, spits of sand or shell, occasionally rocky spits, islets and reefs	Exposed intertidal sandflats and mudflats of beaches or estuaries, occasionally shallow water in saltworks	Molluscs, worms, crustaceans and insects	
Oriental plover	Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia *Internationally important site:* • Dampier Saltworks • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Soft wet mud or in shallow water of beaches and tidal mudflats	Short grass, hard stony bare ground, mudflats or among beachcast seaweed on beaches	Insects, including termites, beetles, grasshoppers, crickets	Not available

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Oriental pratincole	Widespread along the coasts of the Pilbara and Kimberley *Internationally important site:* • Eighty Mile Beach • Roebuck Plains	Bare areas such as claypans or areas with low vegetation, such as saltmarsh	Open plains, floodplains or short grassland, artificial wetlands (saltworks), beaches, mudflats and islands, or around coastal lagoons Usually feeds aerially, at heights varying from just above the ground up to 300 m	Insects, including dragonflies, cicadas, beetles, moths, ants, termites, locusts, grasshoppers, flies, bees and wasps	Not available
Pacific golden plover	Widespread along the coasts of the Pilbara and Kimberley Nationally important site: • Eighty Mile Beach	Sandy beaches and spits, rocky points, islets, exposed reef, occasionally mangrove and saltmarsh vegetation, beachcast seaweed, levee banks and saltwork evaporation ponds	Sandy, muddy and rocky shores, sheltered estuaries and lagoons, occasionally saltmarsh, mangrove or pasture	Molluscs, polychaete worms, insects, insect larvae, spiders, crustaceans, occasionally seeds, leaves, lizards, bird eggs and fish	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Red knot	Large numbers regularly recorded in north-west Australia *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Sandy beaches, spits and islets, and mudflats close to feeding grounds	Soft substrate near the water edge including intertidal mudflats and sandflats exposed by low tide	Worms, bivalves, gastropods, crustaceans and echinoderms	
Red-necked stint	Widespread in coastal areas across Australia *Internationally important site:* • Barrow Island • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Sheltered beaches, spits, banks or islets of sand, mud, coral or shingle, occasionally in saltmarsh or other vegetation	Feed in dense flocks on bare wet mud such as intertidal mudflats or sandflats, or in very shallow water	Marine worms, molluscs, snails and slugs, shrimps, spiders, beetles, flies and ants	

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Ruddy turnstone	Found in most coastal regions across Australia *Internationally important site:* • Barrow Island • Eighty Mile Beach • Roebuck Bay • Lacepede Islands	Beaches above the tideline, among rocks, shells, beachcast seaweed or other debris	Between lower supralittoral and lower littoral zones of foreshores. Often forage among banks of stranded seaweed or other tide-wrack. Occasionally forage on exposed rocky platforms, coral reefs and mudflats	Insects, worms, crustaceans, molluscs, and spiders Occasionally been known to eat fish, birds' eggs and carrion and human food scraps	
Ruff	Periodically recorded in Port Hedland, Kununurra and the Argyle Diamond Mine	Wetlands with exposed mudflats and short dense vegetation	Exposed mudflats with shallow water and dry mud	Moss, plant fibre, seeds, annelid worms, molluscs, crustaceans, spiders, insects, fish and amphibians	Not available

Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Sanderling	Occur most of the NWMR coast as far east as Derby *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	Bare sand high on the beach clumps of washed-up kelp coastal dunes rocky reefs and ledge	Open sandy beaches exposed to open sea-swell, exposed sandbars and spits and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed.	Plants, seeds, worms, crustaceans, spiders, insects. Occasionally on medusae, fish, larger molluscs and crustaceans taken as carrion	
Sharp-tailed sandpiper	Widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of Pilbara to Kimberley *Internationally important site:* • Port Hedland Saltworks • Eighty Mile Beach	Edges of wetlands, on wet open mud or sand, in shallow water, or in short sparse vegetation, such as grass or saltmarsh	Edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water. Also forage among inundated vegetation of saltmarsh, grass or sedges	Seeds, worms, molluscs, crustaceans and insects	

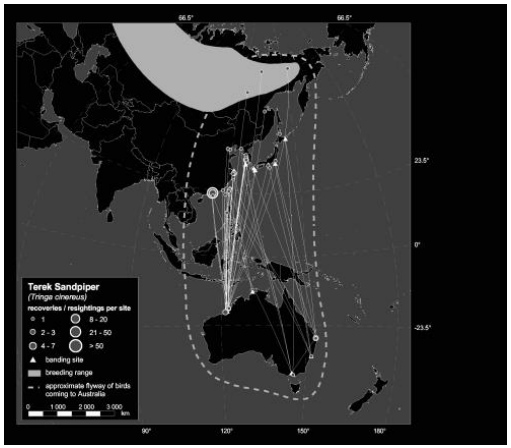
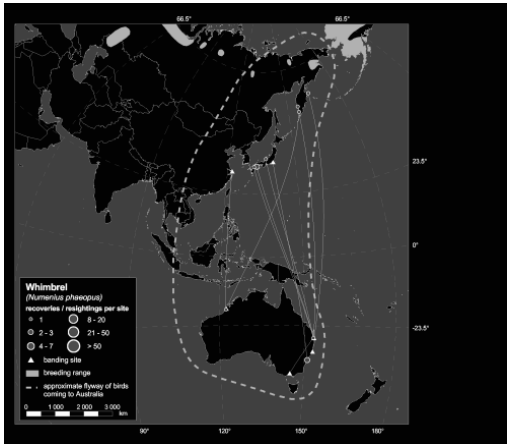
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton et al (2006)
Terek sandpiper	The species is widespread in the Pilbara and Kimberley, from Dampier to Wyndham, with occasional records around Shark Bay *Internationally important site:* • Eighty Mile Beach • Roebuck Bay	In or among mangroves, may perch in branches or roots up to 2 m from the ground, or in shade beneath	Soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons	Crustaceans, insects, seeds, molluscs and arachnids	
Whimbrel	Widespread from Carnarvon to the north-east Kimberley Primarily coastal distribution. There are also scattered inland records of Whimbrels in all regions *Internationally important site:* • Roebuck Bay	Regularly roost in mangroves and other structures flooded at high tide. May also roost on ground of muddy, sandy or rocky beaches; rocky islets and coral cays.	Intertidal mudflats, muddy banks of estuaries and in coastal lagoons, open unvegetated areas or among mangroves. Occasionally on sandy beaches or among rocks	Annelids, crustaceans and, rarely, vertebrates (e.g. small fish, little tern chicks)	

Table 8-5 Species summary for moderate occurrence key shorebird species

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Asian dowitcher	Regular visitor to the north-west between Port Hedland and Broome *Internationally important sites:* • Roebuck Bay and Port Hedland saltworks	Coastal lagoons, estuaries and tidal creeks	Intertidal mud flats	Polychaete worms and larvae, also insect larvae and molluscs
Australian painted snipe	Widespread in low numbers	Shallow freshwater wetlands with bare mud and dense canopy cover	Dense vegetation cover, occasionally mudflats and grassland	Vegetation, seeds, insects, worms, molluscs and crustaceans
Little curlew	Widespread with distribution concentrated along the northern coast from Port Hedland during the non-breeding season. *Internationally important sites:* • Roebuck Plains • Roebuck Bay • Anna Plains • Derby Sewage Ponds • Parry Floodplain.	Short, dry grassland, and occasionally dry saltmarshes, coastal swamps, mudflats or sandflats in estuaries, or on the beaches of sheltered coasts.	Short, dry grassland and sedgeland with shallow freshwater pools or seasonal inundation.	Insects, seeds and berries.
Common greenshank	Occurs in all types of wetlands and has the widest distribution of any shorebird in Australia *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Wetlands, shallow pools and puddles, or slightly elevated on rocks, sandbanks or small muddy islets	Edges of wetlands, in soft mud on mudflats, in channels, among pneumatophores of mangroves or other sparse, emergent or fringing vegetation, such as sedges or saltmarsh	Molluscs, crustaceans, insects, and occasionally fish and frogs

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Common sandpiper	Widespread in low numbers	Rocks or in roots or branches of vegetation, especially mangroves	Bare soft mud at the edges of wetlands	Molluscs, crustaceans and insects
Pectoral sandpiper	Low numbers recorded across the Gascoyne, Pilbara and Kimberley regions	Coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands	Bare soft mud at the edges of wetlands	Algae, seeds, crustaceans, arachnids and insects
Wood sandpiper	NWMR supports largest numbers in Australia. Notable areas include Parry floodplain, Shark Bay	Low trees, grassy hillocks	Bare soft mud at the edges of wetlands	Insects and molluscs
Long-toed stint	Widespread along the coasts of the Pilbara and Kimberley	Shallow inland wetlands	Wetland or islets with wet mud or shallow water and short vegetation	Seeds, molluscs, crustaceans, insects, occasionally algae
Pin-tailed snipe	Recorded in the Pilbara, Port Hedland, Myaree Pool, Maitland River and near Karratha	Wide variety of wetland habitats including flooded paddy-fields, wet grasslands, seepage swamps and marshland	Muddy shorelines of swamps and along streams	Molluscs, adult and larval insects, earthworms and occasionally crustaceans, seeds and other plant matter

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Swinhoe's snipe	Recorded in the Pilbara, Kimberley, Mount Goldsworth, Mount Blaize and near the Mitchell Plateau	Grasses and rushes around the edge of fresh and brackish marshes	Grasses and rushes near the water edge, in addition to hummocks or on mudflats around seepage areas	Earthworms, adult and larval insects

8.4 Other marine birds

Species descriptions for high occurrence key other marine bird species are summarised in **Table 8-6**.

Table 8-6 Species summary for high occurrence key other marine bird species

Species	NWMR presence		Predominant feeding behaviour	Diet
Fork-tailed swift	*Non-breeding:* Oct – Apr Widespread in coastal areas as far north as Carnarvon, including some on nearshore and offshore islands. Scattered along the Pilbara coast to the east Kimberley region	Aerial forager, flying anywhere from 1 m to 300 m above the ground to forage Typically feed in flocks ranging from 10 to 1,000 birds	Insectivorous	
Osprey	*Breeding:* April to February, though depends on latitude. NWMR individuals breeding early in season compared to SWMR *Non-breeding*: remain in breeding territories Continuous distribution of the species around the coast except for a possible gap at Eighty Mile Beach	Hover momentarily and then dive down, sometimes in stages, before snatching prey from near the surface with the feet or by plunging into the water feet first	Fish, especially mullet where available Rarely take molluscs, crustaceans, insects, reptiles, birds and mammals.	

9. THREATENED AND MIGRATORY SPECIES SEASONAL PRESENCE

Seasonal sensitivity for key threatened and migratory species in the NWMR presented in **Table 9-1.** The timing presented is displayed as a broad representation for the NWMR, with location specific seasonality presented within Environment Plans (EPs).

Table 9-1 Seasonal sensitivity of key threatened and migratory species in the NWMR

Species	January	February	March	April	May	June	July	August	September	October	November	December
Fishes, sharks and rays												
Whale shark - foraging (northward from Ningaloo) [1]												
Whale shark - foraging (high density prey, Ningaloo Reef)[2]												
Dwarf sawfish - reproduction[3]												
Dwarf sawfish - foraging[4]												
Largetooth (freshwater) sawfish - reproduction (pupping)[5]												
Largetooth (freshwater) sawfish - foraging												
Green sawfish (reproduction)												
Green sawfish (foraging)												
Marine reptiles- turtle nesting												
Green turtle												
Ashmore Reef Stock (G-AR)[6]												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Scott Reef-Browse Island Stock (G-ScBr)[7]												
NWS Stock (G-NWS)[8]												
Hawksbill turtle												
Western Australia Stock (H-WA)[9]												
Flatback turtle												
Cape Domett Stock (F-CD)[10]												
South-west Kimberley Stock (F-swKim)[11]												
Pilbara Stock (F-Pil)[12]												
Unknown genetic stock Kimberley, Western Australia[13]												
Loggerhead turtle												
Western Australia Stock (LH-WA)[14]												
Cetaceans												
Fin whale[15]												
Humpback whale - northern migration[16]												
Humpback whale - southern migration[17]												

Species	January	February	March	April	May	June	July	August	September	October	November	December
Humpback whale - reproduction (nursing, Kimberley coast)[18]												
Omura's whale[19]												
Pygmy blue whale - northern migration[20]												
Pygmy blue whale - southern migration[21]												
Southern Right Whale (calving/presence in NWMR)[22]												
Seabirds (high occurrence seabirds with designated BIAs)												
Wedge-tailed shearwater - breeding / foraging *fledgling emergence (first two weeks of April)				*								
Australian lesser noddy NWMR presence in non-breeding period *breeding – Ashmore Reef and Abrolhos, may forage in NWMR								*	*	*	*	*
Common noddy - breeding												
Bridled tern – breeding and foraging												
Australian fairy tern - breeding/foraging												
Great frigatebird- breeding / foraging	*	*	*	*	*	*	*	*	*			

Species	January	February	March	April	May	June	July	August	September	October	November	December
*possibly present in NWMR in non-breeding and foraging in breeding season												
Lesser frigatebird - breeding / foraging *possibly present in NWMR in non-breeding and foraging in breeding season	*	*	*	*	*	*	*	*	*			
Brown booby - presence in NWMR (breeding / foraging) Present NWMR year-round (breeding at Ashmore Reef, Adele Island, Lacepedes between Jan-Mar (protracted through to Oct at Ashmore Reef)												
Red-footed booby - presence in NWMR (breeding / foraging) Breed at Ashmore Reef and Adele Island, recorded breeding year-round at Ashmore Reef												
Little tern - breeding / foraging maybe present in NWMR outside breeding season – foraging and resting												
Roseate tern - breeding												
Caspian tern – breeding Dampier Archipelago and North-west Cape												
Greater crested tern												
White-tailed and Red-tailed tropicbird - breeding largest breeding populations on Christmas Island												
	Peak period (reliable / predictable).											
	Species present / undertaking biologically important behaviour in the NWMR.											
	Species not likely to be present or undertaking biologically important behaviour in NWMR.											

Species	January	February	March	April	May	June	July	August	September	October	November	December

[1]Whale shark foraging northward from Ningaloo in Spring (DCCEEW, 2024b15). Migration along the north coast of WA also known to occur between July - November (TSSC, 2015d). Potential presence of whale sharks year-round at Ningaloo (Norman et al., 2017).

[2]Whale shark foraging (high density prey) Ningaloo April- June, Autumn (DCCEEW, 2024b15). March- July (TSSC, 2015d). Potential presence of whale sharks year-round at Ningaloo (Norman et al., 2017).

[3]Dwarf sawfish reproduction- potential to occur in all seasons (DCCEEW, 2024b15).

[4]Dwarf sawfish foraging- potential to occur in all seasons (DCCEEW, 2024b15).

[5]Largetooth (freshwater) sawfish pupping occurs from January to May (DCCEEW, 2024b15).

[6]Green turtle nesting Ashmore Reef Stock- year-round (peak: December- January) (CoA, 2017).

[7]Green turtle nesting Scott Reef-Browse Island Stock November- March (CoA, 2017).

[8]Green turtle nesting NWS Stock November- March (CoA, 2017).

[9]Hawskbill turtle nesting Western Australia Stock October- February (CoA, 2017).

[10]Flatback turtle nesting Cape Domett Stock- year-round (peak July- September) (CoA, 2017).

[11]Flatback turtle nesting South-west Kimberley Stock October- March (CoA, 2017).

[12] Flatback turtle nesting Pilbara stock October- March (CoA, 2017).

[13]Unknown stock nesting Kimberley May- July (CoA, 2017).

[14]Loggerhead turtle nesting Western Australia stock November- May.

[15]Fin whale presence NWMR May- October (Aulich et al., 2022). Migrating north from Cape Leewuin (SWMR) May- October. Present offshore Dampier August- October (Aulich et al., 2022).

[16]Humpback whale northern migration. Range June- September (DCCEEW, 2024b15; TSSC, 2015b; DSEWPaC, 2012a). Peak July- August (Salgado Kent et al. 2012).

[17]Humpback whale southern migration. Range July- November. Peak August- October. (TSSC, 2015b; Irvine & Salgado Kent, 2019; Salgado Kent et al., 2012; DSEWPaC, 2012a;

[18]Humpback whale- reproduction (nursing, Kimberley coast) Winter (DCCEEW, 2024b15). Breeding August- September (DSEWPac, 2012a; TSSC, 2015b). Calves present off Kimberley in October (Thums et al., 2018).

[19]Limited data however sightings reported year-round (Cerchio et al, 2019).

Species	January	February	March	April	May	June	July	August	September	October	November	December

[20] Pygmy blue whale northern migration April - August (DCCEEW, 2024b15; DSEWPaC, 2012a; McCauley et al., 2018; CoA, 2015a). Peak April- July (Thums et al., 2022)

[21]Pygmy blue whale southern migration October- December, possibly into January (DCCEEW, 2024b15; DSEWPaC, 2012a citing (McCauley and Jenner, 2010; McCauley et al., 2018; Thums et al*.,* 2022; CoA, 2015a). Peak November - December (Thums et al., 2022).

[22]Southern right whale calving and migratory presence in Exmouth Gulf (NWMR) June to September with peak months July and August (DCCEEW, 2024a)

All seabird seasonality information derived from BIA metadata, scientific publications and expert opinion (Worley, 2024).

10. KEY ECOLOGICAL FEATURES

Key ecological features (KEFs) are elements of the Commonwealth marine environment that are considered to be important for a marine region's biodiversity or ecosystem function and integrity. KEFs have been identified by the Australian Government based on advice from scientists about the ecological processes and characteristics of the area.

KEFs meet one or more of the following criteria:

- a species, group of species, or a community with a regionally important ecological role (e.g. a predator, prey that affects a large biomass or number of other marine species),
- a species, group of species or a community that is nationally or regionally important for biodiversity,
- an area or habitat that is nationally or regionally important for:
  - enhanced or high productivity (such as predictable upwellings – an upwelling occurs when cold nutrient-rich waters from the bottom of the ocean rise to the surface),
  - aggregations of marine life (such as feeding, resting, breeding or nursery areas), or
  - biodiversity and endemism (species which only occur in a specific area),
- a unique seafloor feature, with known or presumed ecological properties of regional significance.

Thirteen KEFs are designated within the NWMR, twelve KEFs within the SWMR and eight KEFs within the NMR. These KEFs have been identified in the Protected Matters search (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) and outlined in **Table 10-1, Table 10-2** and **Table 10-3,** and **Figure 10-1, Figure 10-10-2** and **Figure** -10-3.

Table 10-1 Key Ecological Features (KEF) within the NWMR.

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Carbonate bank and terrace system of the Sahul Shelf	✓	-	-	Unique seafloor feature with ecological properties of regional significance Regionally important because of their role in enhancing biodiversity and local productivity relative to their surrounds. The carbonate banks and terraces provide areas of hard substrate in an otherwise soft sediment environment which are important for sessile species	The carbonate banks and terrace system of the Sahul Shelf are located in the western Joseph Bonaparte Gulf and to the north of Cape Bougainville and Cape Londonderry. The carbonate banks and terraces are part of a larger complex of banks and terraces that occurs on the Van Diemen Rise in the adjacent NMR. The bank and terrace system of the Van Diemen Rise covers approximately 31,278 km^2 and forms part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east. The feature is characterised by terrace, banks, channels and valleys (DSEWPAC, 2012c). The banks, ridges and terraces of the Van Diemen Rise are raised geomorphic features with relatively high proportions of hard substrate that support sponge and octocoral gardens. These, in turn, provide habitat to other epifauna, by providing structure in an otherwise flat environment (Przeslawski et al., 2011). Plains and valleys are characterised by scattered epifauna and infauna that include polychaetes and ascidians. These epibenthic communities support higher order species such as olive ridley turtles, sea snakes and sharks (DSEWPAC, 2012c)
Pinnacles of the Bonaparte Basin	✓	-	-	Unique seafloor feature with ecological properties of regional significance Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species Recognised as a biodiversity hotspot for sponges The Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 10-3**)	The Pinnacles of the Bonaparte Basin provide areas of hard substrate in an otherwise relatively featureless environment, the pinnacles are likely to support a high number of species, although a better understanding of the species richness and diversity associated with these structures is required (DSEWPAC, 2012a, 2012c). Covering >520 km^2 within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds, and foraging turtles (DSEWPAC, 2012a, 2012c)
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	✓	-	-	High productivity, biodiversity and aggregation of marine life that apply to both the benthic and pelagic habitats within the feature	Ashmore Reef is the largest of only three emergent oceanic reefs present in the north-eastern Indian Ocean and is the only oceanic reef in the region with vegetated islands. Ashmore contains a large reef shelf, two large lagoons, several channelled carbonate sand flats, shifting sand cays, an extensive reef flat, three vegetated islands—East, Middle and West islands—and

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
					surrounding waters. Rising from a depth of more than 100 m, the reef platform is at the edge of the NWS and covers an area of 239 km². Ashmore Reef and Cartier Island and the surrounding Commonwealth waters are regionally important for feeding and breeding aggregations of birds and other marine life; they are areas of enhanced primary productivity in an otherwise low-nutrient environment (DSEWPAC, 2012a). Ashmore Reef supports the highest number of coral species of any reef off the WA coast
Seringapatam Reef and the Commonwealth waters in the Scott Reef complex	✓	-	-	Support diverse aggregations of marine life, have high primary productivity relative to other parts of the region, are relatively pristine and have high species richness, which apply to both the benthic and pelagic habitats within the feature	Seringapatam Reef and the Commonwealth waters in the Scott Reef complex are regionally important in supporting the diverse aggregations of marine life, high primary productivity, and high species richness associated with the reefs themselves. As two of the few offshore reefs in the North-west, they provide an important biophysical environment in the region (DSEWPAC, 2012a)
Continental slope demersal fish communities	✓	✓	✓	High biodiversity of demersal fish assemblages, including high levels of endemism	The diversity of demersal fish assemblages on the continental slope in the Timor Province, the Northwest Transition and the North-west Province is high compared to elsewhere along the Australian continental slope (DSEWPAC, 2012a). The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last et al., 2005). The slope of the Timor Province and the Northwest Transition also contains more than 500 species of demersal fishes of which 64 are considered endemic (Last et al., 2005), making it the second richest area for demersal fishes throughout the whole continental slope. Demersal fish species occupy two distinct demersal biomes associated with the upper slope (225–500 m water depths) and the mid-slope (750–1000 m). Although poorly known, it is suggested that the demersal slope communities rely on bacteria and detritus-based systems comprised of infauna and epifauna, which in turn become prey for a range of teleost fishes, molluscs and crustaceans (Brewer et al., 2007). Higher-order consumers may include carnivorous fishes, deepwater sharks, large squid, and toothed whales (Brewer et al., 2007). Pelagic production is phytoplankton-based, with hot spots around oceanic reefs and islands (Brewer et al., 2007)

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Ancient coastline at 125 m depth contour	✓	✓	✓	Unique seafloor feature with ecological properties of regional significance Provides areas of hard substrate and therefore may provide sites for higher diversity and enhanced species richness relative to surrounding areas of predominantly soft sediment	Several steps and terraces as a result of Holocene sea level changes occur in the region, with the most prominent of these features occurring as an escarpment along the NWMR and Sahul Shelf at a water depth of 125 m. The ancient coastline is not continuous throughout the NWMR and coincides with a well-documented eustatic stillstand at about 130 m depth worldwide (Falkner et al., 2009). Where the ancient coastline provides areas of hard substrate, it may contribute to higher diversity and enhanced species richness relative to soft sediment habitat (Falkner et al., 2009). Parts of the ancient coastline, represented as rocky escarpment, are considered to provide biologically important habitat in an area predominantly made up of soft sediment. The escarpment type features may also potentially facilitate mixing within the water column due to upwelling, providing a nutrient-rich environment. Although the ancient coastline adds additional habitat types to a representative system, the habitat types are not unique to the coastline as they are widespread on the upper shelf (Falkner et al., 2009)
Canyons linking the Argo Abyssal Plain and Scott Plateau	-	✓	-	Facilitates nutrient upwelling, creating enhanced productivity and encouraging diverse aggregations of marine life Likely to be important due to their historical association with sperm whale aggregations	Interactions with the Leeuwin Current and strong internal tides are thought to result in upwelling at the canyon heads, thus creating conditions for enhanced productivity in the region (Brewer et al., 2007). As a result, aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, predatory fishes and seabirds are known to occur in the area due to its enhanced productivity (Sleeman et al., 2007)
Glomar Shoal	-	✓	-	An area of high productivity and aggregations of marine life including commercial and recreational fish species	Glomar Shoal is a submerged littoral feature located about 150 km north of Dampier on the Rowley shelf at depths of 33–77 m (Falkner et al., 2009). Studies by Abdul Wahab et al. (2018) found a number of hard coral and sponge species in water depths less than 40 m. One hundred and seventy (170) different species of fishes were detected with greatest species richness and abundance in shallow habitats (Abdul Wahab et al., 2018). Fish species present include a number of commercial and recreational species such as rankin cod, brown striped snapper, red emperor, crimson snapper, bream and yellow-spotted triggerfish (Falkner et al., 2009; Fletcher and Santoro, 2009). These species have recorded high catch rates associated with Glomar Shoal, indicating that the shoal is likely to be an area of high productivity

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	-	✓	-	Regionally important in supporting high species richness, higher productivity and aggregations of marine life	The Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals KEF is adjacent to the three nautical mile State waters limit surrounding Clerke Reef and Imperieuse Reef, and include the Mermaid Reef Marine Park as described in **Section 11**. The reefs provide a distinctive biophysical environment in the region. They have steep and distinct reef slopes and associated fish communities. In evolutionary terms, the reefs may play a role in supplying coral and fish larvae to reefs further south via the southward flowing Indonesian Throughflow. Both coral communities and fish assemblages differ from similar habitats in eastern Australia (*Done* et al*.,* 1994)
Exmouth Plateau	-	✓	✓	Unique seafloor feature with ecological properties of regional significance, which apply to both benthic and pelagic habitats Likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of approximately 1000 m	The Exmouth Plateau is a large, mid-slope, continental margin plateau that lies off the northwest coast of Australia. It ranges in depth from about 500 to more than 5000 m and is a major structural element of the Carnarvon Basin (Miyazaki and Stagg, 2013). The large size of the Exmouth Plateau and its expansive surface may modify deep water flow and be associated with the generation of internal tides; both of which may subsequently contribute to the upwelling of deeper, nutrient-rich waters closer to the surface (Brewer et al., 2007). Satellite observations suggest that productivity is enhanced along the northern and southern boundaries of the plateau (Brewer et al., 2007). Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna (DSEWPAC, 2012a). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton attracted to seasonal upwellings, as well as larger predators such as billfishes, sharks and dolphins (Brewer et al., 2007). Protected and migratory species are also known to pass through the region, including whale sharks and cetaceans
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	-	-	✓	Unique seafloor feature with ecological properties of regional significance The feature creates an enhanced productivity environment, attracting aggregations of fish and higher-order consumers such as large predatory	The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope, Exmouth Plateau and Ningaloo Reef. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads (DSEWPAC, 2012a). Aggregations of whale sharks, manta rays, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
				fish, sharks, toothed whales and dolphins	
Commonwealth waters adjacent to Ningaloo Reef	-	-	✓	High productivity and diverse aggregations of marine life The Commonwealth waters adjacent to Ningaloo Reef and associated canyons and plateaus are interconnected and support the high productivity and species richness of Ningaloo Reef. Ningaloo Reef is globally significant as it is the only extensive coral reef in the world that fringes the west coast of a continent	The Leeuwin and Ningaloo currents interact, leading to areas of enhanced productivity in the Commonwealth waters adjacent to Ningaloo Reef. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area (DSEWPAC, 2012a). The spatial boundary of this KEF, as defined in the Australian Marine Spatial Information System, is defined as the waters contained in the existing Ningaloo AMP provided in **Section 11**
Wallaby Saddle	-	-	✓	High productivity and aggregations of marine life: Representing almost the entire area of this type of geomorphic feature in the NWMR. It is a unique habitat that neither occurs anywhere else nearby (within hundreds of kilometres) nor with as large an area (Falkner et al. 2009)	The Wallaby Saddle may be an area of enhanced productivity. Historical whaling records provide evidence of sperm whale aggregations in the area of the Wallaby Saddle, possibly due to the enhanced productivity of the area and aggregations of baitfish (DSEWPAC, 2012a)

[1] Values description sourced from Marine bioregional plan for the North-west Marine Region (DSEWPAC, 2012a) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database.

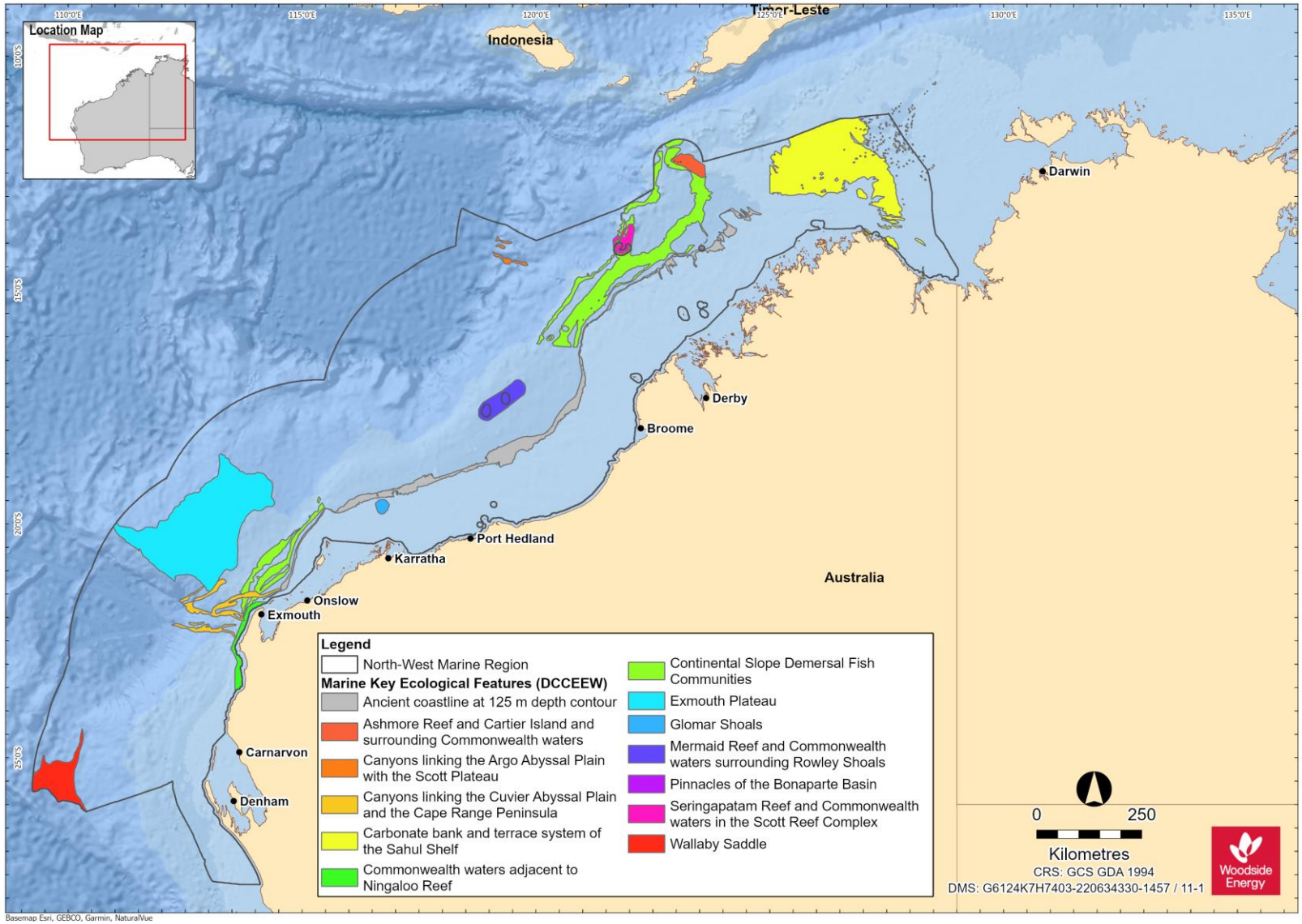


Figure 10-1 Key Ecological Features (KEFs) within the NWMR (data source: DCCEEW, 2024d)

Table 10-2 Key Ecological Features (KEF) within the SWMR

KEF Name	Values[1]	Description
Albany Canyons group and adjacent shelf break	High productivity and aggregations of marine life, and unique seafloor feature with ecological properties of regional significance Both benthic and demersal habitats within the feature are of conservation value	The Albany Canyons group is thought to be associated with small, periodic subsurface upwelling events, which may drive localised regions of high productivity. The canyons are known to be a feeding area for sperm whale and sites of orange roughy aggregations. Anecdotal evidence also indicates that this area supports fish aggregations that attract large predatory fish and sharks
Ancient coastline at 90-120 m depth	Relatively high productivity and aggregations of marine life, and high levels of biodiversity and endemism The feature creates topographic complexity, that may facilitate benthic biodiversity and enhanced biological productivity	Benthic biodiversity and productivity occur where the ancient coastline forms a prominent escarpment, such as in the western Great Australian Bight, where the sea floor is dominated by sponge communities of significant biodiversity and structural complexity
Cape Mentelle upwelling	Facilitates nutrient upwelling, supporting high productivity and diverse aggregations of marine life	The Cape Mentelle upwelling draws relatively nutrient-rich water from the base of the Leeuwin Current, up the continental slope and onto the inner continental shelf, where it results in phytoplankton blooms at the surface. The phytoplankton blooms provide the basis for an extended food chain characterised by feeding aggregations of small pelagic fish, larger predatory fish, seabirds, dolphins and sharks
Commonwealth marine environment surrounding the Houtman Abrolhos Islands (and adjacent shelf break)	High levels of biodiversity and endemism within benthic and pelagic habitats	The Houtman Abrolhos Islands and surrounding reefs support a unique mix of temperate and tropical species, resulting from the southward transport of species by the Leeuwin Current over thousands of years. The Houtman Abrolhos Islands are the largest seabird breeding station in the eastern Indian Ocean. They support more than one million pairs of breeding seabirds
Commonwealth marine environment surrounding the Recherche Archipelago	Aggregations of marine life and high levels of biodiversity and endemism within benthic and demersal communities	The Recherche Archipelago is the most extensive area of reef in the SWMR. Its reef and seagrass habitat supports a high species diversity of warm temperate species, including 263 known species of fish, 347 known species of molluscs, 300 known species of sponges, and 242 known species of macroalgae. The islands also provide haul-out (resting areas) and breeding sites for Australian sea lions and New Zealand fur seals

KEF Name	Values[1]	Description
Commonwealth marine environment within and adjacent to the west-coast inshore lagoons	High productivity and aggregations of marine life within benthic and pelagic habitats Important for benthic productivity and recruitment for a range of marine species	These lagoons are important for benthic productivity, including macroalgae and seagrass communities, and breeding and nursery aggregations for many temperate and tropical marine species. They are important areas for the recruitment of commercially and recreationally important fish species. Extensive schools of migratory fish visit the area annually, including herring, garfish, tailor and Australian salmon
Commonwealth marine environment within and adjacent to Geographe Bay	High productivity and aggregations of marine life, and high levels of biodiversity, recruitment within benthic and pelagic communities	Geographe Bay is known for its extensive beds of tropical and temperate seagrass that support a diversity of species, many of them not found anywhere else. The bay provides important nursery habitat for many species. Juvenile dusky whaler sharks use the shallow seagrass habitat as nursery grounds for several years, before ranging out to adult feeding grounds along the shelf break. The seagrass also provides valuable habitat for fish and invertebrates (Carruthers et al., 2007). It is also an important resting area for migratory humpback whales
Diamantina Fracture Zone	Unique seafloor feature with ecological properties of regional significance which apply to its benthic and demersal habitats	The Diamantina Fracture Zone is a rugged, deep-water environment of seamounts and numerous closely spaced troughs and ridges. Very little is known about the ecology of this remote, deep-water feature, but marine experts suggest that its size and physical complexity mean that it is likely to support deep-water communities characterised by high species diversity, with many species found nowhere else
Naturaliste Plateau	Unique seafloor feature with ecological properties of regional significance including high species diversity and endemism which apply to its benthic and demersal habitats	The Naturaliste Plateau is Australia's deepest temperate marginal plateau. The combination of its structural complexity, mixed water dynamics and relative isolation indicate that it supports deep-water communities with high species diversity and endemism
Perth Canyon and adjacent shelf break, and other west-coast canyons	An area of higher productivity that attracts feeding aggregations of deep-diving mammals and large predatory fish. It is also recognised as a unique seafloor feature with ecological properties of regional significance	The Perth Canyon is the largest known undersea canyon in Australian waters. Deep ocean currents rise to the surface, creating a nutrient-rich cold-water habitat attracting feeding aggregations of deep-diving mammals, such as pygmy blue whales and large predatory fish that feed on aggregations of small fish, krill and squid
Western demersal slope and associated fish communities of the Central Western Province	Provides important habitat for demersal fish communities and supports species groups that are nationally or regionally important to biodiversity	The western demersal slope provides important habitat for demersal fish communities, with a high level of diversity and endemism. A diverse assemblage of demersal fish species below a depth of 400 m is dominated by relatively small benthic species such as grenadiers, dogfish and cucumber fish. Unlike other slope fish communities in Australia, many of these species display unique physical adaptations to feed on the sea floor (such as a mouth position adapted to bottom feeding), and many do not appear to migrate vertically in their daily feeding habits
Western rock lobster	A species that plays a regionally important ecological role	This species is the dominant large benthic invertebrate in the region. The lobster plays an important trophic role in many of the inshore ecosystems of the SWMR. Western rock lobsters are an important part of the food web on the inner shelf, particularly as juveniles.

KEF Name	Values[1]	Description

[1.] *Values description sourced from Marine bioregional plan for the South-west Marine Region (DSEWPAC, 2012b) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database*

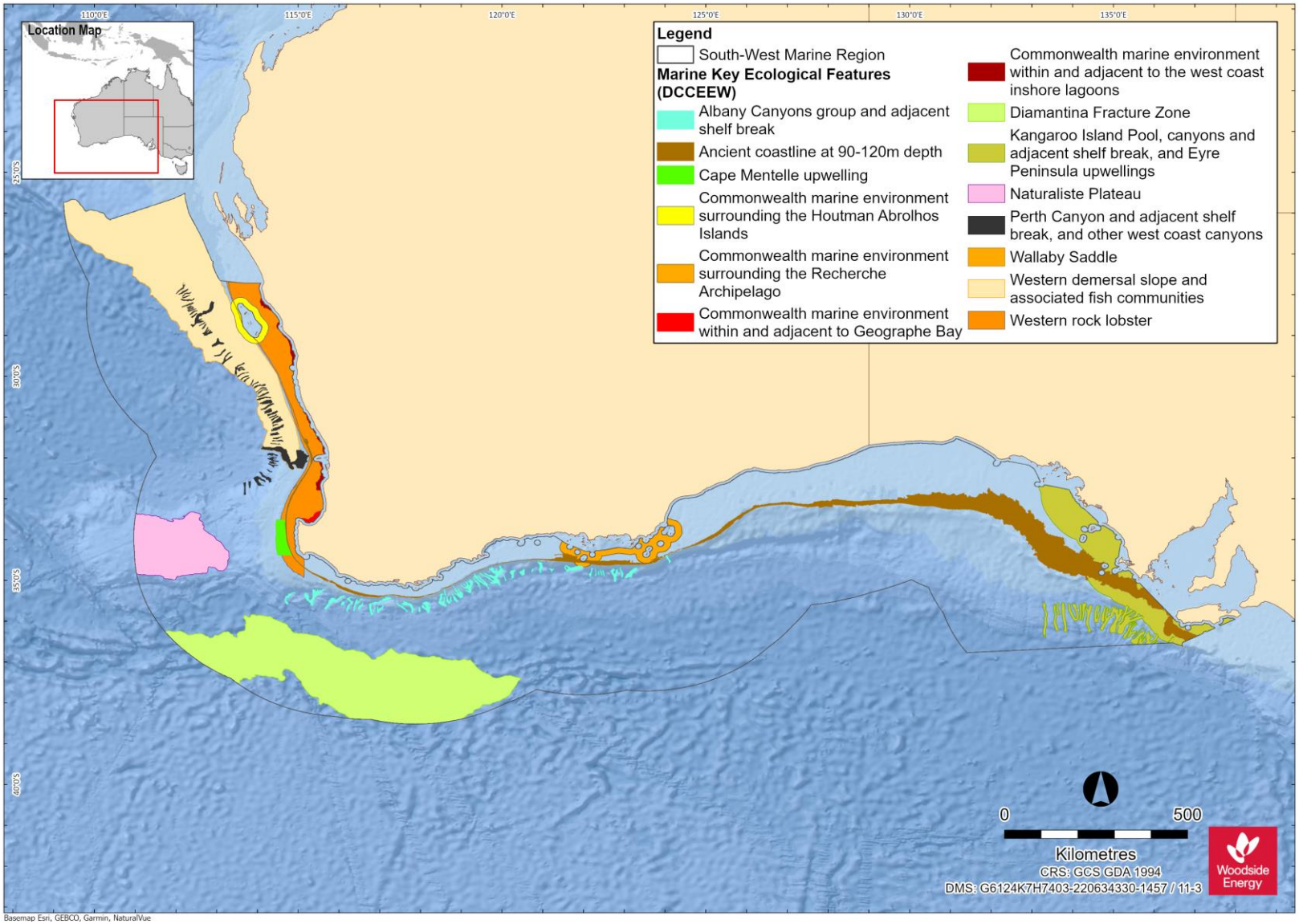


Figure 10-10-2. Key Ecological Features (KEFs) within the SWMR (data source: DCCEEW, 2024d)

Table 10-3 Key Ecological Features (KEF) within the NMR

KEF Name	Values[1]	Description
Carbonate bank and terrace system of the Van Diemen Rise	Important for its role in enhancing biodiversity and local productivity relative to its surrounds and for supporting relatively high species diversity The feature has been identified as a sponge biodiversity hotspot (Przeslawski et al. 2014)	The bank and terrace system of the Van Diemen Rise is part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east; it is characterised by terrace, banks, channels and valleys. The variability in water depth and substrate composition may contribute to the presence of unique ecosystems in the channels. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments of the deep channels; epifauna and infauna include polychaetes and ascidians. Olive ridley turtles, sea snakes and sharks are also found associated with this feature
Gulf of Carpentaria basin	Regional importance for biodiversity, endemism and aggregations of marine life relevant to benthic and pelagic habitats	The Gulf of Carpentaria basin is one of the few remaining near-pristine marine environments in the world. Primary productivity in the Gulf of Carpentaria basin is mainly driven by cyanobacteria that fix nitrogen but is also strongly influenced by seasonal processes. The soft sediments of the basin are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms. The basin also supports assemblages of pelagic fish species including planktivorous and schooling fish, with top predators such as shark, snapper, tuna, and mackerel
Gulf of Carpentaria coastal zone	High productivity, aggregations of marine life (including several endemic species) and high biodiversity compared to broader region	Nutrient inflow from rivers adjacent to the NMR generates higher productivity and more diverse and abundant biota within the Gulf of Carpentaria coastal zone than elsewhere in the region. The coastal zone is near pristine and supports many protected species such as marine turtles, dugongs, and sawfishes. Ecosystem processes and connectivity remain intact; river flows are mostly uninterrupted by artificial barriers and healthy, diverse estuarine and coastal ecosystems support many species that move between freshwater and saltwater environments
Pinnacles of the Bonaparte Basin	Unique seafloor feature with ecological properties of regional significance Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species Recognised as a biodiversity hotspot for sponges The Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 10-1**)	Covering more than 520 km^2 within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds and foraging turtles

KEF Name	Values[1]	Description
Plateaux and saddle north-west of the Wellesley Islands	High species abundance, diversity and endemism of marine life	Abundance and species density are high in the plateaux and saddle as a result of increased biological productivity associated with habitats rather than currents. Submerged reefs support corals that are typical of northern Australia, including corals that have bleach-resistant zooxanthellae; and particular reef fish species that are different to those found elsewhere in the Gulf of Carpentaria. Species present include marine turtles and reef fish such as coral trout, cod, mackerel, and shark. Seabirds frequent the plateaux and saddle, most likely due to the presence of predictable food resources for feeding offspring
Shelf break and slope of the Arafura Shelf	The shelf break and slope of the Arafura Shelf is defined as a key ecological feature for its ecological significance associated with productivity emanating from the slope It also forms part of a unique biogeographic province (Last et al., 2005)	The shelf break and slope of the Arafura Shelf is characterised by continental slope and patch reefs and hard substrate pinnacles. The ecosystem processes of the feature are largely unknown in the region; however, the Indonesian Throughflow and surface wind-driven circulation are likely to influence nutrients, pelagic dispersal and species and biological productivity in the region. Biota associated with the feature is largely of Timor–Indonesian Malay affinity
Submerged coral reefs of the Gulf of Carpentaria	High aggregations of marine life, biodiversity and endemism Twenty per cent of the reefs found in the NMR are situated within this KEF (Harris et al., 2007)	The submerged coral reefs of the Gulf of Carpentaria are characterised by submerged patch, platform and barrier reefs that form a broken margin around the perimeter of the Gulf of Carpentaria basin, rising from the sea floor at depths of 30–50 m. These reefs provide breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks. Coral trout species that inhabit the submerged reefs are smaller than those found in the Great Barrier Reef and may prove to be an endemic sub-species
Tributary Canyons of the Arafura Depression	High productivity and high levels of species diversity and endemism of marine life within the benthic and pelagic habitats of the feature	The tributary canyons are approximately 80–100 m deep and 20 km wide. The largest of the canyons extend some 400 km from Cape Wessel into the Arafura Depression, and are the remnants of a drowned river system that existed during the Pleistocene era. Sediments in this feature are mainly calcium-carbonate rich, although sediment type varies from sandy substrate to soft muddy sediments and hard, rocky substrate. Marine turtles, deep sea sponges, barnacles and stalked crinoids have all been identified in the area

[1] *Values description sourced from Marine bioregional plan for the North Marine Region (DSEWPAC, 2012c) and Department of Agriculture, Water and the Environment (DAWE) SPRAT database.*

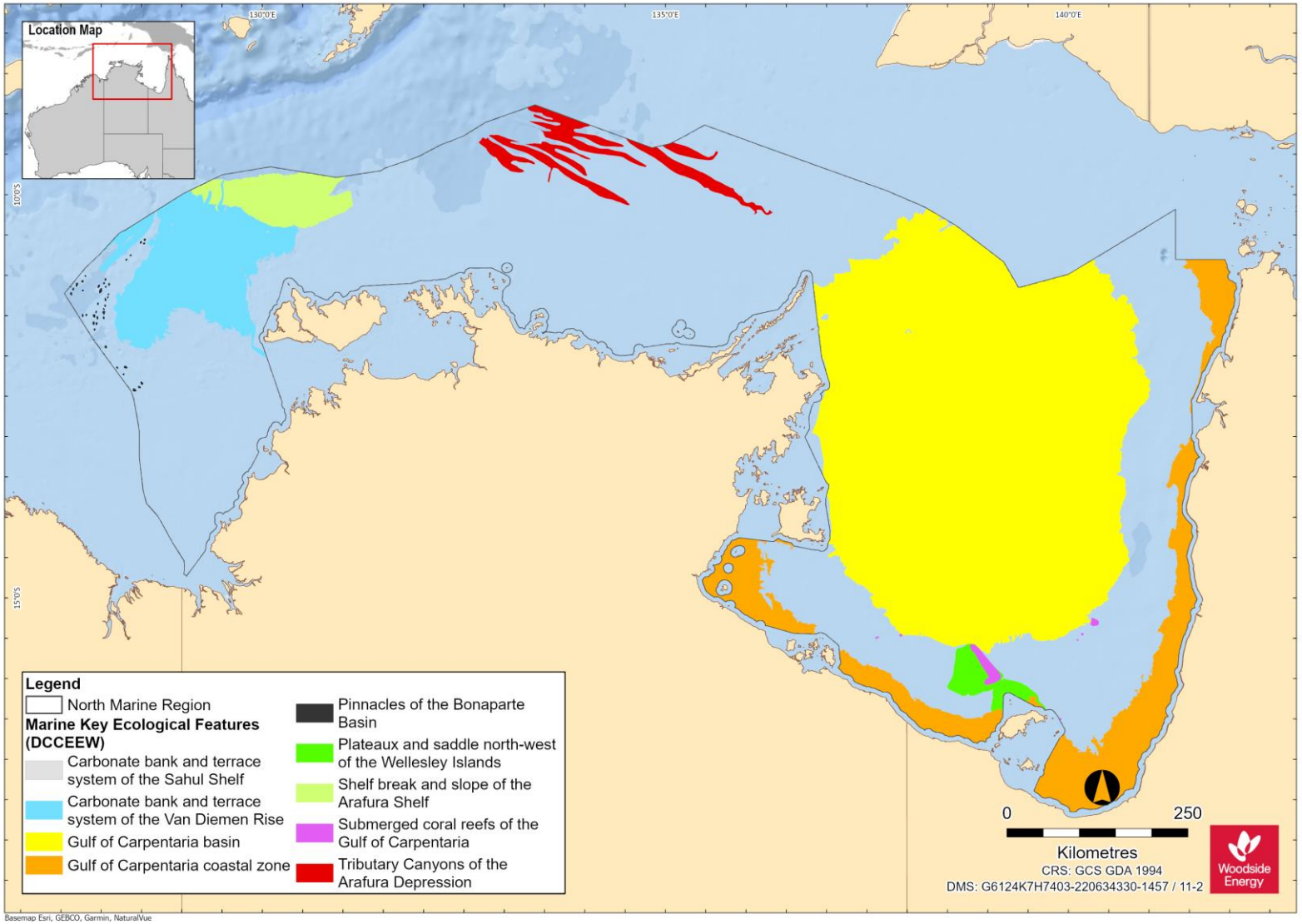


Figure -10-3. Key Ecological Features (KEFs) within the NMR (data source: DCCEEW, 2024d)

11. PROTECTED AREAS

11.1 Regional Context

Protected areas include World Heritage Properties, National Heritage Places, Wetlands of International Importance, Australian Marine Parks, State Marine Parks and Reserves, Threatened Ecological Communities and the Australian Whale Sanctuary. The PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show that there are 29 protected areas found in the NWMR, 18 in the SWMR and 9 in the NMR.

Australian Marine Parks are outlined in, **Table 11-1, Table 11-3** and **Table 11-4.** All other protected areas of each of the marine regions NWMR, SWMR and NMR are outlined in **Table 11-6, Table** 11-7 and **Table 11-8**, respectively.

11.2 World Heritage Properties

World Heritage listings are sites of outstanding universal value and meet at least 10 selection criteria, compiled of cultural and natural basis criteria. World Heritage listings classed as meeting outstanding natural criteria are discussed in this section and World Heritage sites classed as meeting outstanding cultural criteria are discussed in **Section 12**.

The list of Australia's World Heritage Properties and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show two World Heritage Properties within the NWMR (**Table 11-6**), one World Heritage Property within the SWMR (**Table 11-7**), and though not reported in the NMR PMST Report, Kakadu National Park World Heritage Area is included in **Table 11-8**.

11.3 National and Commonwealth Heritage Places–- Natural

The National Heritage List is Australia's list of natural, historic, and Indigenous places of outstanding significance to the nation. The National Heritage List Spatial Database describes the place name, class (Indigenous, natural, historic), and status. Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values which are owned or controlled by the Australian Government.

Only National and Commonwealth Heritage Places classed as natural are discussed in this section. Heritage Places classed as Indigenous or historic are discussed in **Section 12**.

A search of the National Heritage List Spatial Database and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified three natural National Heritage Places in the NWMR (**Table 11-6**), one in the SWMR (**Table 11-7**) and for the NMR, Kakadu National Park (not included in the PMST report) is included in **Table 11-8**.

A search of the Commonwealth Heritage List identified six natural commonwealth heritage places within the NWMR (**Table 11-6**) and one within the SWMR (**Table 11-7**).

11.4 Wetlands of International Importance (listed under the Ramsar Convention)

Australia has 65 Ramsar wetlands that cover >8.3 million ha. Ramsar wetlands are those that are representative, rare, or unique wetlands, or that are important for conserving biological diversity.

The List of Wetlands of International Importance held under the Ramsar Convention and the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) identified four Ramsar Sites with coastal features within the NWMR (**Table 11-6**), five in the SWMR (**Table 11-7**) and two for the Northern Territory, included for the NMR (not included in the PMST report) (**Table 11-8**).

11.5 Australian Marine Parks

Australian Marine Parks (AMPs), proclaimed under the EPBC Act in 2007 and 2013, are located in Commonwealth waters from the outer edge of State and Territory waters (3 nm) to the outer boundary of Australia's EEZ 200 nm from the shore.

PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) show 16 AMPs within the NWMR, 10 within the SWMR and eight within the NMR. These are displayed in **Figure 11-1**, Error! Reference source not found. and Error! Reference source not found. respectively.

The values of all marine parks identified in the North-West, South-West and North Marine Network management plans are described in **Table 11-1**, **Table 11-3** and **Table 11-4**, respectively.

There are also two AMPs in the Indian Ocean territories. These are the Cocos (Keeling) Islands Marine Park and the Christmas Island Marine Park (**Table 11-2, Figure 11-1**) (Commonwealth of Australia, 2021).

11.5.1 North West Marine Parks Network

Table 11-1 describes Australian Marine Parks within the North West Marine Park Network, according to the North West Marine Parks Network Management Plan 2018 (DNP, 2018a).

Table 11-1 Summary of Commonwealth Australian Marine Parks (AMPs) in the North West Marine Park Network

North West Marine Park Network	IUCN zones	Description and Values
Argo-Rowley Terrace Marine Park	National Park (II) Multiple use (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Argo–Rowley Terrace Marine Park is located approximately 270 km North-west of Broome, Western Australia, and extends to the limit of Australia's exclusive economic zone. This AMP covers an area of 146,003 km^2 and water depths between 220 m and 6000 m, protecting ecological communities in the deep offshore region. The AMP provides connectivity between the Mermaid Reef Marine Park and WA Rowley Shoals Marine Park.
		Natural values The Marine Park includes ecosystems representative of: • Northwest Transition—an area of shelf break, continental slope, and the majority of the Argo Abyssal Plain. Key topographic features include Mermaid, Clerke and Imperieuse Reefs; • Timor Province—an area dominated by warm, nutrient-poor waters. Canyons are an important feature in this area of the Marine Park and are generally associated with high productivity and aggregations of marine life. Key ecological features: • Canyons linking the Argo Abyssal Plain with the Scott Plateau; and • Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The Marine Park includes a range of seafloor features such as canyons on the slope between the Argo Abyssal Plain, Rowley Terrace and Scott Plateau. These are believed to be up to 50 million years old and are associated with small, periodic upwellings that results in localised higher levels of biological productivity. The Marine Park includes species listed under the EPBC Act. Biologically important areas within the Marine Park include resting and breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North West Marine Park Management Plan', limited information regarding the cultural significance of this marine park is currently available (DNP, 2018a).
		Heritage values There are no international, Commonwealth or national heritage listings relevant to the Argo-Rowley Terrace Marine Park. The Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976: Alfred* (wrecked in 1908) and *Pelsart* (wrecked in 1908).
		Social and economic values Socio-economic values of this Marine Park include commercial fishing and mining.

North West Marine Park Network	IUCN zones	Description and Values
Ashmore Reef Marine Park	Sanctuary (Ia) Recreational Use (IV)	**Description** The Ashmore Reef Marine Park is located approximately 630 km north of Broome and 110 km south of the Indonesian island of Roti. The Marine Park is located in Australia's External Territory of Ashmore and Cartier Islands. It is within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box. The Marine Park covers an area of 583 km² and water depths from less than 15 m to 500 m.
		Natural values The Ashmore Reef Marine Park includes ecosystems representative of the Timor Province—a bioregion with a depth range from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. Ashmore Reef is an important feature of the bioregion. There are two distinct demersal fish communities: one on the upper slope, the other mid slope. The marine environment includes two extensive lagoons, sand flats, shifting sand cays, extensive reef flat and large areas of seagrass. The reef ecosystems are comprised of hard and soft corals, gorgonians, sponges and a range of encrusting organisms, with the highest number of coral species of any reef off the Western Australian coast. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within the Marine Park include breeding, foraging and resting habitat for seabirds, resting and foraging habitat for migratory shorebirds, foraging, mating, nesting and internesting habitat for marine turtles, foraging habitat for dugong, and a migratory pathway for pygmy blue whales. The Ashmore Reef Ramsar site includes the largest of the atolls in the region. West Island, Middle Island and East Island represent the only vegetated islands in the region. The site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugong, and has the highest diversity of hermatypic (reef-building) corals on the West Australian coast. It is known for its abundance and diversity of sea snakes, although populations at Ashmore Reef have been in decline since 1998. Key ecological features: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and • Continental slope demersal fish communities—an area of high-diversity demersal fish assemblages.
		Cultural values Sea country is valued for Indigenous Australians cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North West Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a). This Marine Park is valued in Indonesian culture as it contains Indonesian artefacts and grave sites. Ashmore lagoon is still accessed as a rest or staging area for traditional Indonesian fishers travelling to and from fishing grounds within the MoU Box.
		Heritage values Ashmore Reef is a Commonwealth Heritage listed site, meeting criteria A, B and C.
		Social and economic values Tourism, recreation and scientific research are important activities in this Marine Park.
Carnarvon Canyon Marine Park	Habitat Protection (IV)	**Description** The Carnarvon Canyon Marine Park is located approximately 300 km North-west of Carnarvon. It covers an area of 6177 km² and a water depth range of 1,500–6,000 m.

North West Marine Park Network	IUCN zones	Description and Values
		Natural values This Marine Park includes ecosystems representative of the Central Western Transition—a bioregion characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities. It includes the Carnarvon Canyon, a single-channel canyon covering the entire depth range of this Marine Park. Ecosystems of this Marine Park are influenced by tropical and temperate currents, deep-water environments and proximity to the continental slope and shelf. The soft-bottom environment at the base of the Carnarvon Canyon is likely to support deep seafloor species (e.g. holothurians, polychaetes and sea-pens). This Marine Park supports a range of species listed under the EPBC Act.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park.
		Social and economic values Commercial fishing is an important activity in the Marine Park.
Cartier Island Marine Park	Sanctuary (Ia)	**Description** The Cartier Island Marine Park is located approximately 45 km south-east of Ashmore Reef Marine Park and 610 km north of Broome, Western Australia. Both Marine Parks are in Australia's External Territory of Ashmore and Cartier Islands and are also within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box. The Cartier Island Marine Park covers an area of 172 km² and water depths from less than 15 m to 500 m.
		Natural values This Marine Park includes ecosystems representative of the Timor Province—a bioregion with a depth range from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. The reefs and islands of this bioregion are regarded as biodiversity hotspots. Key ecological features: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and • Continental slope demersal fish communities. There are two distinct demersal fish communities of the continental slope: one on the upper slope, the other mid slope. This Marine Park includes an unvegetated sand island (Cartier Island), mature reef flat, a small, submerged pinnacle (Wave Governor Bank), and two shallow pools to the North-east of the island. It is also an area of high diversity and abundance of hard and soft corals, gorgonians (sea fans), sponges and a range of encrusting organisms. The reef crests are generally algal dominated, while the reef flats feature ridges of coral rubble and large areas of seagrass. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting, nesting and foraging habitat for marine turtles and foraging habitat for whale sharks. This Marine Park is internationally significant for its abundance and diversity of sea snakes.

North West Marine Park Network	IUCN zones	Description and Values
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North-west Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a).
		Heritage values This Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976:* the *Ann Millicent* (wrecked in 1888). No international or national heritage listings apply to this Marine Park.
		Social and economic values Scientific research is an important activity in this Marine Park.
Dampier Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Dampier Marine Park is located approximately 10 km North-east of Cape Lambert and 40 km from Dampier, extending from the Western Australian state water boundary. This Marine Park covers an area of 1252 km² and a water depth range between less than 15 m and 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting habitat for marine turtles and a migratory pathway for humpback whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Ngarluma, Yindjibarndi, Yaburara, and Mardudhunera people have responsibilities for sea country in this Marine Park. The native title holders for these people are represented by the Ngarluma Aboriginal Corporation and Yindjibarndi Aboriginal Corporation. These Prescribed Bodies Corporate represent traditional owners with native title over coastal areas adjacent to this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara and Yamatji regions.
		Heritage values No international, Commonwealth or national listings apply to this Marine Park, however the Marine Park is approximately 10 km north of the Dampier Archipelago (including Burrup Peninsula) national heritage listing, which has significant Indigenous heritage values including rock art sites.
		Social and economic values Port activities, commercial fishing and recreation, including fishing, are important activities in this Marine Park.

North West Marine Park Network	IUCN zones	Description and Values
Eighty Mile Beach Marine Park	Multiple Use (VI)	**Description** The Eighty Mile Beach Marine Park is located approximately 74 km North-east of Port Hedland, adjacent to the Western Australian Eighty Mile Beach Marine Park. This Marine Park covers an area of 10,785 km² and water depth ranges between less than 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding, foraging and resting habitat for seabirds, internesting and nesting habitat for marine turtles, foraging, nursing and pupping habitat for sawfish and a migratory pathway for humpback whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The sea country of the Nyangumarta, Karajarri and Ngarla people extends into the Eighty Mile Beach Marine Park. Sea country is culturally significant and important to their identity. They have an unbroken, deep spiritual connection to their sea country, with traditional practices continuing today. Staple foods of living cultural value for the Nyangumarta, Karajarri and Ngarla people include saltwater fish, turtles, dugong, crabs and oysters. Access to sea country by families is important for cultural traditions, livelihoods and future socio-economic development opportunities. The native title holders for the Nyangumarta, Karajarri and Ngarla people are represented by the Karajarri Aboriginal Corporation, Nyangumarta Karajarri Aboriginal Corporation, Nyangumarta Warrarn Aboriginal Corporation, and Wanparta Aboriginal Corporation. These Prescribed Body Corporates represent traditional owners with native title over coastal area adjacent to the Marine Park. They are the points of contact for their respective areas of responsibility for sea country in the Marine Park. The Kimberley Land Council and the Yamatji Marlpa Aboriginal Corporation are the Native Title Representative Bodies for Kimberley and Pilbara regions.
		Heritage values This Marine Park contains three known shipwrecks listed under the *Historic Shipwrecks Act 1976: Lorna Doone* (wrecked in 1923), *Nellie* (wrecked in 1908), and *Tifera* (wrecked in 1923). No international, Commonwealth or national listings apply to the Marine Park.
		Social and economic values Tourism, commercial fishing, pearling and recreation are important activities in this Marine Park.
Gascoyne Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Gascoyne Marine Park is located approximately 20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Reef Marine Park and the Western Australian Ningaloo Marine Park and extends to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 81,766 km² and water depth varies between 15 m and 6,000 m.

North West Marine Park Network	IUCN zones	Description and Values
		Natural values This Marine Park includes ecosystems representative of: • Central Western Shelf Transition—continental shelf with water depths up to 100 m, and a significant transition zone between tropical and temperate species; • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, benthic slope communities comprising tropical and temperate species; and • Northwest Province—an area of continental slope comprising diverse and endemic fish communities. Key ecological features: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; • Commonwealth waters adjacent to Ningaloo Reef; • Continental slope demersal fish communities; and • Exmouth Plateau. Ecosystems represented in this Marine Park are influenced by the interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat and migratory pathway for pygmy blue whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli people have responsibilities for sea country in this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values *World heritage* The Ningaloo Coast was listed as an area of outstanding universal value under the World Heritage Convention in 2011, meeting world heritage listing criteria vii and x. The Ningaloo Coast World Heritage Property is adjacent to the Marine Park. *Commonwealth heritage* The Ningaloo Marine Area (Commonwealth waters) meets the Commonwealth heritage listing criteria A, B and C. The Ningaloo Marine Area is adjacent to the Marine Park. *National heritage* The Ningaloo Coast meets the national heritage listing criteria A, B, C, D, and F and is adjacent to the Marine Park. *Historic shipwrecks* The Marine Park contains more than five known shipwrecks listed under the *Historic Shipwrecks Act 1976*.
		Social and economic values Commercial fishing, mining and recreation are important activities in this Marine Park.
Kimberley Marine Park	Habitat Protection (IV) National Park (II)	**Description** The Kimberley Marine Park is located approximately 100 km north of Broome, extending from the Western Australian state water boundary north from the Lacepede Islands to the Holothuria Banks offshore from Cape Bougainville. This Marine Park is

North West Marine Park Network	IUCN zones	Description and Values
	Multiple Use (VI)	adjacent to the Western Australian Lalanggarram/Camden Sound Marine Park and the North Kimberley Marine Park. This Marine Park covers an area of 74,469 km² and water depths from less than 15 m to 800 m.
		Natural Values This Marine Park includes ecosystems representative of: • Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and an ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. • Northwest Shelf Transition—straddles the North-west and North Marine Regions and in the Northwest includes shelf break, continental slope, and the majority of the Argo Abyssal Plain and is subject to a high incidence of cyclones. Benthic biological communities in the deeper parts of the bioregion have not been extensively studied, although high levels of species diversity and endemism occur among demersal fish communities on the continental slope. • Timor Province—water depths (of the bioregion) ranging from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. The reefs and islands of the bioregion are regarded as biodiversity hotspots. Endemism in demersal fish communities of the continental slope is high; two distinct communities have been identified on the upper and mid slopes. Key ecological features: • The ancient coastline at the 125 m depth contour; and • The continental slope demersal fish communities. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting and nesting habitat for marine turtles, breeding, calving and foraging habitat for inshore dolphins, calving, migratory pathway and nursing habitat for humpback whales, migratory pathway for pygmy blue whales, foraging habitat for dugong and foraging habitat for whale sharks.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Wunambal Gaambera, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people's sea country extends into the Kimberley Marine Park. The Wunambal Gaambera people's country includes daagu (deep waters), with about 3,400 km² of their sea country located in this Marine Park. The Wunambal Gaambera, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people have an unbroken connection to their sea country, having deep spiritual connection through Wunggurr (creator snakes) that still live in the sea. Staple foods of living cultural value include saltwater fish, turtles, dugong, crabs and oysters. Access to sea country by families is important for cultural traditions, livelihoods and future socio-economic development opportunities. The national heritage listing for the West Kimberley recognises the following key cultural heritage values: • Wanjina Wunggurr Cultural Tradition which incorporates many sea country cultural sites; • Log-raft maritime tradition, which involved using tides and currents to access warrurru (reefs) far offshore to fish; • Interactions with Makassan traders around sea foods over hundreds of years; and • Important pearl resources that were used in traditional trade through the wunan and in contemporary commercial agreements.

North West Marine Park Network	IUCN zones	Description and Values
		The Wunambal Gaambera, Dambimangari and Bardi Jawi people consider that these values extend into the Kimberley Marine Park. The Wanjina Wunggurr is law of the Wunambal Gaambera and Dambimangari people and it is recognised that all of the sea country, land, plants and animals were put there by Wanjina Wunggurr. Under Wanjina Wunggurr law, the Wunambal Gaambera and Dambimangari people have a responsibility to manage country, to maintain the health of the country and all living things. The Wunambal Gaambera, Bardi Jawi, Mayala and the Nyul Nyul people have had native title determined over parts of their sea country included in this Marine Park. The native title holders for these people are represented by the Wunambal Gaambera Aboriginal Corporation, Bardi and Jawi Niimidiman Aboriginal Corporation and the Kimberley Land Council. These representative bodies are the points of contact for their respective areas of sea country for this Marine Park. The Kimberley Land Council is the Native Title Representative Body for the Kimberley region.
		Heritage values This Marine Park contains more than 40 known shipwrecks listed under the *Historic Shipwrecks Act 1976.* No international, Commonwealth or national heritage listings apply to the Marine Park, however the Marine Park is adjacent to the national heritage place of the West Kimberley.
		Social and economic values Tourism, commercial fishing, mining, recreation, including fishing and traditional use, are important activities in this Marine Park.
Mermaid Reef Marine Park	National Park (II)	**Description** The Mermaid Reef Marine Park is located approximately 280 km North-west of Broome, adjacent to the Argo–Rowley Terrace Marine Park and approximately 13 km from the Western Australian Rowley Shoals Marine Park. This Marine Park covers an area of 540 km² and water depths from less than 15 m to 500 m. Mermaid Reef is one of three reefs forming the Rowley Shoals. The reefs of the Rowley Shoals are significant as they are considered ecological stepping stones for reef species originating in Indonesian/Western Pacific waters, are one of a few offshore reef systems on the North-west Shelf, and may also provide an upstream source for recruitment to reefs further south.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Transition—an area of shelf break, continental slope, and the majority of the Argo Abyssal Plain. Together with Clerke Reef and Imperieuse Reef, Mermaid Reef is a biodiversity hotspot and key topographic feature of the Argo Abyssal Plain. A key ecological feature of this Marine Park is the Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals. Ecosystems of this Marine Park are associated with emergent reef flat, deep reef flat, lagoon, and submerged sand habitats. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North-west Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a).
		Heritage values No international or national listings apply to this Marine Park. Mermaid Reef–Rowley Shoals was established on the Commonwealth Heritage List in 2004, meeting Commonwealth heritage listing criteria A, B, C and D.

North West Marine Park Network	IUCN zones	Description and Values
		This Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976*: *Lively* (wrecked in 1810).
		Social and economic values Tourism, recreation, and scientific research are important activities in this Marine Park.
Montebello Marine Park	Multiple Use (VI)	**Description** The Montebello Marine Park is located offshore of Barrow Island and 80 km west of Dampier extending from the Western Australian State water boundary, and is adjacent to the Western Australian Barrow Island and Montebello Islands Marine Parks. This Marine Park covers an area of 3413 km² and water depths from less than 15 m to 150 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities. A key ecological feature of this Marine Park is the ancient coastline at the 125 m depth contour. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds, internesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks.
		Cultural values The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara region. Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. As noted in the 'North-west Marine Park Management Plan', there is limited information about the cultural significance of this Marine Park (DNP, 2018a).
		Heritage values No international, Commonwealth or national listings apply to this Marine Park, however this Marine Park is adjacent to the Western Australia Barrow Island and the Montebello– Barrow Island Marine Conservation Reserves which have been nominated for national heritage listing. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976: Trial* (wrecked in 1622), the earliest known shipwreck in Australian waters and *Tanami* (unknown date).
		Social and economic values Tourism, commercial fishing, mining and recreation are important activities in this Marine Park.
Ningaloo Marine Park	National Park (II) Recreational Use (IV)	**Description** The Ningaloo Marine Park stretches approximately 300 km along the west coast of the Cape Range Peninsula, and is adjacent to the Western Australian Ningaloo Marine Park and Gascoyne Marine Park. This Marine Park covers an area of 2,435 km² and a water depth range of 30 m to more than 500 m. This Marine Park provides connectivity between deeper offshore waters of the shelf break and coastal waters of the adjacent Western Australian Ningaloo Marine Park. It includes some of the most diverse continental slope habitats in Australia, including the continental slope area between North-west Cape and the Montebello Trough. Canyons in this Marine Park are important for sustaining the nutrient conditions that support the high diversity of Ningaloo Reef.
		Natural values This Marine Park includes examples of ecosystems representative of:

North West Marine Park Network	IUCN zones	Description and Values
		• Central Western Shelf Transition—continental shelf of water depths up to 100 m, and a significant transition zone between tropical and temperate species; • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species; • Northwest Province—an area of continental slope comprising diverse and endemic fish communities; and • Northwest Shelf Province—a dynamic environment, influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. Key ecological features: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; • Commonwealth waters adjacent to Ningaloo Reef; and • Continental slope demersal fish communities. Ecosystems represented in this Marine Park are influenced by interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and / or foraging habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, foraging habitat and migratory pathway for pygmy blue whales, breeding, calving, foraging and nursing habitat for dugong and foraging habitat for whale sharks.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli people have responsibilities for sea country in this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region**.**
		Heritage values *World heritage* This Marine Park is within the Ningaloo Coast World Heritage Property, meeting world heritage listing criteria vii and x. The area is valued for high terrestrial species endemism, marine species diversity and abundance, and the interconnectedness of large-scale marine, coastal and terrestrial environments. The area connects the limestone karst system and fossil reefs of the ancient Cape Range to the nearshore reef system of Ningaloo Reef, to the continental slope and shelf in Commonwealth waters. *National heritage* The Ningaloo Coast overlaps this Marine Park, meeting the national heritage listing criteria A, B, C, D, and F. *Commonwealth heritage* The Ningaloo Marine Area (Commonwealth waters) meets Commonwealth heritage listing criteria A, B and C. The Ningaloo Marine Area overlaps this Marine Park. *Historic shipwrecks* This Marine Park contains more than 15 known shipwrecks listed under the *Historic Shipwrecks Act 1976*.
		Social and economic values Tourism and recreation, including fishing, are important activities in this Marine Park.

North West Marine Park Network	IUCN zones	Description and Values
Roebuck Marine Park	Multiple Use (VI)	**Description** The Roebuck Marine Park is located approximately 12 km offshore of Broome and is adjacent to the Western Australian Yawuru Nagulagun/Roebuck Bay Marine Park. This Marine Park covers an area of 304 km² and a water depth range of less than 15 m to 70 m. This Marine Park is adjacent to the Roebuck Bay Ramsar site, recognised as one of the most important areas for migratory shorebirds in Australia; and the Western Australian Yawuru Nagulagun/Roebuck Bay Marine Park, providing connectivity between offshore and inshore coastal waters of Roebuck Bay.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and resting habitat for seabirds, foraging and internesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for dugong.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. Yawuru people have always recognised the waters of Roebuck Bay as nagula (Yawuru sea country), and have customary responsibilities to care for it. They have a deep spiritual connection to offshore landscapes from Bugarrigarra (creator beings), and believe that snake-like metaphysical beings inhabit the sea. Cultural sites in sea country are also a source of law. The Yawuru people harvest marine resources according to the six Yawuru seasons. They have harvested pearl shell for food and cultural purposes. Fish are a staple food source, and fishing a form of cultural expression, connecting people to their country, modelled on tradition and based in traditional law. Access to sea country by families is important to cultural traditions, livelihoods and future socio-economic development opportunities. The Yawuru Native Title Holders Aboriginal Corporation is the Prescribed Body Corporate representing traditional owners with native title over coastal areas adjacent to this Marine Park, and is the point of contact for sea country in this Marine Park. The Kimberley Land Council is the Native Title Representative Body for the Kimberley region.
		Heritage values No international, Commonwealth or national listings apply to the Marine Park, however it is adjacent to the West Kimberley National Heritage Place.
		Social and economic values Tourism, commercial fishing, pearling and recreation, including fishing, are important activities that occur in the Marine Park.
	Multiple Use (VI)	**Description**

North West Marine Park Network	IUCN zones	Description and Values
Shark Bay Marine Park		The Shark Bay Marine Park is located approximately 60 km offshore of Carnarvon, adjacent to the Shark Bay world heritage property and national heritage place. This Marine Park covers an area of 7443 km², extending from the Western Australian State water boundary, and a water depth range between 15 m and 220 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Central Western Shelf—a predominantly flat, sandy and low-nutrient area, in water depths 50 – 100 m. The bioregion is a transitional zone between tropical and temperate species; and • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species. Ecosystems represented in this Marine Park are influenced by the Leeuwin, Ningaloo and Capes currents. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds, internesting habitat for marine turtles, and a migratory pathway for humpback whales. This Marine Park and adjacent coastal areas are also important for shallow-water snapper.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Gnulli and Malgana people have responsibilities for sea country in this Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park , but this Marine Park is adjacent to the Shark Bay, Western Australia World Heritage Property and Shark Bay, Western Australia National Heritage Place. The Marine Park contains approximately 20 known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in the Marine Park.

11.5.2 Indian Ocean Territory

Error! Reference source not found. describes the values of the Indian Ocean territory Australian Marine Parks (Commonwealth of Australia, 2021)

Table 11-2 Summary of Commonwealth marine parks within Indian Ocean territories

Indian Ocean territory Marine Park	IUCN Zones	Values
Christmas Island Marine Park	National Park (II) Habitat Protection (IV)	**Description** Christmas Island Marine Park covers an area of 277,016 km^2 and extends from the island's shoreline to the limit of Australia's exclusive economic zone, approximately 200 nm from shore (except to the north of Christmas Island). This marine park adjoins the marine boundary of Christmas Island National Park (CINP), which extends 50 m seaward from the island. Almost all the island's port is excluded from this marine park, except for a very small and narrow part of the port's western boundary.
		Natural values The tropical waters and fringing coral reefs that surround Christmas Island contain a mix of coral reef species from both the Indian and Pacific Oceans and over 680 species of fish have been recorded in the region. The overlap of these waters gives rise to varieties of hybrid marine fish and some endemic species. Christmas Island also has the world's greatest diversity and abundance of land crabs. The island's waters are essential for the crabs, as they migrate to the coast to breed and release their eggs into the ocean. This Marine Park contains a range of unique seafloor features, habitats and species, particularly seamounts and deep-sea plains. Biologically important areas include foraging areas for the endemic Abbott's booby, Christmas Island frigatebird and golden bosun and other seabirds that nest on Christmas Island, as well as whale shark feeding areas and southern bluefin tuna breeding habitat.
		Cultural values The ocean is a centrepiece of life for many community members, of Christmas Island including those of Malay and Chinese heritage who maintain strong cultural traditions and connections to the surrounding marine environment.
		Social and economic values This Marine Park is valued for fishing (commercial, recreational and subsistence), diving, snorkelling and tourism. There is potential for scientific study and educational activities.
Cocos (Keeling) Islands Marine Park	National Park (II) Habitat Protection (IV)	**Description** Cocos (Keeling) Islands are located around 2,750 km North-west of Perth and the Cocos (Keeling) Islands Marine Park covers a 467,054 km^2 area, extending from most of the islands' shoreline to the limit of the Australian exclusive economic zone, approximately 100 nm from shore. The Cocos (Keeling) islands are a group of 27 tropical low-lying coral islands.
		Natural values The central lagoon system and outer reefs are two of the islands' important habitats. The lagoon encompasses a variety of unique and distinct habitats. This includes seagrass, which is essential for the resident green turtle population (which is a genetically distinct stock that is unique to the islands) as well as for sustaining fish populations. The outer reef habitats are dominated by hard and soft corals and have a high abundance and diversity of reef fish and other species. The offshore waters contain a range of unique seafloor features, habitats, and species, particularly seamounts, deep-sea plains, and a significant deep-sea ridgeline. This Marine Park also protects the foraging habitat of nesting seabirds on North Keeling Island (Pulu Keeling National Park), as well as species such as dolphins, deep-sea fish and sharks that are or may be threatened elsewhere in the region.

Indian Ocean territory Marine Park	IUCN Zones	Values
		Cultural values Most of the islands' community members are Cocos Malay, who maintain vibrant and unique cultural traditions including strong cultural connections to the surrounding marine environment. The lagoon and ocean are an important part of life for all community members living on the remote atoll.
		Social and economic values This Marine Park is valued for recreational and subsistence activities (i.e., fishing, boating, diving, snorkelling, kite surfing, and kayaking), tourism, scientific research, and educational activities.

11.5.3 South-west Marine Parks Network

Table 11-3 describes the Australian Marine Parks within the South-west Marine Parks Network (South-west Network), according to the South West Marine Parks Network Management Plan 2018 (DNP, 2018b)

Table 11-3 Summary of Commonwealth Australia Marine Parks (AMP)s for the South West Marine Park Network

South West Marine Park Network	IUCN zones	Natural Values
Abrolhos Marine Park	National Park (II) Habitat Protection (IV) Multiple use (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Abrolhos Marine Park is located adjacent to the Western Australian Houtman Abrolhos Islands, covering a large offshore area extending from the Western Australian State water boundary to the edge of Australia's exclusive economic zone. It is located approximately 27 km south-west of Geraldton and extends north to approximately 330 km west of Carnarvon. The northernmost part of the shelf component of the Marine Park, north of Kalbarri, is adjacent to the Shark Bay World Heritage Area. This Marine Park covers an area of 88,060 km² and a water depth range between less than 15 m and 6,000 m.
		Natural values This Marine Park includes ecosystems representative of: • Central Western Province—characterised by a narrow continental slope incised by many submarine canyons and the most extensive area of continental rise in any of Australia's marine regions. A significant feature within the area are several eddies that form off the Leeuwin Current at predictable locations, including west of the Houtman Abrolhos Islands; • Central Western Shelf Province— a predominantly flat, sandy and low nutrient area, in water depths between 50 and 100 m. Significant seafloor features of this area include a deep hole and associated area of banks and shoals offshore of Kalbarri. The area is a transitional zone between tropical and temperate species; • Central Western Transition—a deep ocean area characterised by large areas of continental slope, a range of significant seafloor features including the Wallaby Saddle, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species; and • South-west Shelf Transition—a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including a large number of endemic fauna species. Key ecological features: • Commonwealth marine environment surrounding the Houtman Abrolhos Islands; • Demersal slope and associated fish communities of the Central Western Province; • Mesoscale eddies; • Perth Canyon and adjacent shelf break, and other west-coast canyons; • Western rock lobster; • Ancient coastline between 90 m and 120 m depth; and • Wallaby Saddle.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging and breeding habitat for seabirds, foraging habitat for Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales. The Marine Park is adjacent to the northernmost Australian sea lion breeding colony in Australia on the Houtman Abrolhos Islands.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Nanda and Naaguja People have responsibilities for sea country in this Marine Park. Traditional owners have strong stories that connect ocean and land. Artefacts from ancestors are abundant on islands in the adjacent State marine park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values No international heritage listings apply to this Marine Park, however this Marine Park is adjacent to the Western Australian Shark Bay World Heritage Property, listed as an area of outstanding universal value under the World Heritage Convention in 1991, meeting world heritage listing criteria vii, viii, ix, and x. No Commonwealth or national heritage listings apply to this Marine Park ; however this Marine Park is adjacent to the Western Australian Shark Bay National Heritage Place. This Marine Park contains 11 known shipwrecks listed under the *Historic Shipwrecks Act 1976*. The *Zuytdorp* (wrecked in 1712) historic shipwreck protected zone lies in State waters adjacent to the northernmost part of the shelf component of the Marine Park, north of Kalbarri. The *HMAS Sydney II* and *HSK Kormoran* Shipwreck Sites (1941) lie at 2,500 m depth about 75 km east of the northern part of the Marine Park. This site is on the National Heritage List and a historic shipwreck protected zone. The *Batavia* (wrecked on the adjacent Abrolhos Islands in 1629) Shipwreck Site and Survivor Camps Area are on the National Heritage List.
		Social and economic values Tourism, commercial fishing, mining, recreation including fishing, are important activities in the Marine Park.
Bremer Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Bremer Marine Park is located approximately half-way between Albany and Esperance, offshore from the Fitzgerald River National Park, extending from the Western Australian State water boundary. This Marine Park covers an area of 4,472 km² and water depths from 15 m to 5,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope incised by numerous, well-developed submarine canyons; and • South-west Shelf Province—marine life in this area is very diverse and likely influenced by the warm waters of the Leeuwin Current. The sheltered bays along the south coast are important southern right whale calving areas. Key ecological features: • Albany Canyon group and adjacent shelf break; and • Ancient coastline between 90 m and 120 m depth.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, and white sharks, a migratory pathway for humpback whales, and a significant calving area for southern right whales. This Marine Park includes canyons—important aggregation areas for killer whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Noongar people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation, including fishing, are important activities in this Marine Park.
Eastern Recherche Marine Park	National Park Zone (II) Special Purpose Zone (VI)	**Description** The Eastern Recherche Marine Park is located approximately 135 km east of Esperance, adjacent to the Recherche Archipelago, close to the Western Australian Cape Arid National Park. This Marine Park covers an area of 20,575 km², extending from the Western Australia State water boundary to the edge of Australia's exclusive economic zone, and a water depth range from less than 15 m to 6,000 m.
		Natural values This Marine Park includes ecosystems representative of: • South-west Shelf Province—marine life in this area is very diverse and likely influenced by the warm waters of the Leeuwin Current. It includes globally important biodiversity hotspots, such as the waters surrounding the Recherche Archipelago; • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope, numerous, well-developed submarine canyons, and extensive mid-slope terraces; and • Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for threatened southern right whale and the Australian sea lion. Key ecological features: • Mesoscale eddies; • Ancient coastline between 90 m and 120 m depth; and • Commonwealth marine environment surrounding the Recherche Archipelago.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Ngadju and Esperance Nyungar people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976—Rodondo* (wrecked in 1894) and *Start* (wrecked in 1879).
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in this Marine Park.
Geographe Marine Park	National Park Zone (II) Habitat Protection (IV) Multiple Use (VI) Special Purpose (Mining Exclusion Zone) (VI)	**Description** The Geographe Marine Park is located in Geographe Bay, approximately 8 km west of Bunbury and 8 km north of Busselton, adjacent to the Western Australian Ngari Capes Marine Park. This Marine Park covers an area of 977 km^2, extending from the Western Australian State water boundary, and a water depth range between 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the South-west Shelf Province—an area of diverse marine life, influenced by the warm waters of the Leeuwin Current. The bioregion includes globally important biodiversity hotspots, such as the waters off Geographe Bay. Key ecological features: • Commonwealth marine environment within and adjacent to Geographe Bay; and • Western rock lobster. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Noongar people have responsibility for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations.

South West Marine Park Network	IUCN zones	Natural Values
		The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains eight known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing and recreation, including fishing, are important activities in the Marine Park.
Great Australian Bight Marine Park	National Park Zone (II), Multiple Use Zone (VI) Special Purpose Zone (Mining Exclusion) (VI) Special Purpose Zone (VI)	**Description** The Great Australian Bight Marine Park is located approximately 12 km south-east of Eucla and 174 km west of Ceduna, adjacent to the South Australian Far West Coast and Nuyts Archipelago Marine Parks. This Marine Park covers an area of 45,822 km², extending from South Australian State water boundary to the edge of Australia's exclusive economic zone, and a water depth range between less than 15 m and 6,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Great Australian Bight Shelf Transition—a vast and shallow area, characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion; • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and that is characterised by a long continental slope, numerous, well-developed submarine canyons, and extensive mid-slope terraces such as the Ceduna Terrace. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving area, migratory pathway and large aggregation area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Mirning and Wirangu people have responsibilities for sea county in this Marine Park. The far west coast region of South Australia includes over 1,000 km of coastline along the Nullarbor Cliffs of the Great Australian Bight and the Nyuts Archipelago, and supports a sea-based tradition and culture. The Mirning people have a strong connection to land and sea country of the Nullarbor, and the Wirangu people have a strong connection to land and sea country across the remainder of the far west coastal region. Fishing is woven into the beliefs and values of this region, through the use of resources such as shell fish, periwinkles, abalone and razorfish; and the sharing of traditional fishing knowledge, catch and meals. The care and protection of these waters, the coastline, marine life and resources correspond directly with cultural stories, sites and knowledge. South Australian Native Title Services is the native title service provider for the South Australian region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, and mining are important activities in this Marine Park.
Jurien Marine Park	National Park Zone (II) Special Purpose (VI)	**Description** The Jurien Marine Park is located approximately 148 km north of Perth and 155 km south of Geraldton, adjacent to the Western Australian Jurien Bay Marine Park. This Marine Park covers an area of 1,851 km² of continental shelf, extending from the Western Australian State water boundary, and a water depth range between 15 m and 220 m.
		Natural values This Marine Park includes ecosystems representative of: • South-west Shelf Transition—consists of a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the bioregion's western edge. The area contains a diversity of tropical and temperate marine life including a large number of endemic fauna species; and • Central Western Province—this Marine Park includes a small component of this bioregion, characterised by a narrow continental slope and influenced by the Leeuwin Current. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Demersal slope and associated fish communities of the Central Western Province; and • Western rock lobster. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Noongar people have responsibilities for sea country in this Marine Park. Traditional owners have strong stories that connect ocean and land. Artefacts from ancestors are abundant on islands in the adjacent State marine park. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park. This Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976— SS Cambewarra* (wrecked in 1914) and *Oleander* (wrecked in 1884).
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in this Marine Park.
Murat Marine Park	National Park Zone (II)	**Description**

South West Marine Park Network	IUCN zones	Natural Values
		The Murat Marine Park is located 86 km off the west coast south-west of Ceduna, south of the South Australian Nuyts Archipelago Marine Park. This Marine Park covers an area of 938 km² and is relatively shallow, with water depths between less than 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion. Key ecological features: • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds and Australian sea lions.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Mirning people have a strong attachment to land and sea country of the Nullarbor, while the Wirangu people have a strong attachment to land and sea country across the remainder of the far west coast region. The care and protection of the waters, coastline, marine creatures, marine environments and sea resources correspond directly with cultural stories and important cultural sites and knowledge. South Australian Native Title Services is the native title service provider for the South Australian region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values The remoteness of this Marine Park makes access difficult with most recreational and tourism activities confined to State waters. Commercial ships may pass through this Marine Park to and from the port of Ceduna.
Perth Canyon Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Perth Canyon Marine Park is located approximately 52 km west of Perth and approximately 19 km west of Rottnest Island. This Marine Park covers an area of 7,409 km² and water depths range between 120 m and 5,000 m.
		Natural values This Marine Park includes examples of ecosystems representative of: • Central Western Province—characterised by a narrow continental slope incised by many submarine canyons, including Perth Canyon, and the most extensive area of continental rise in any of Australia's marine regions. A significant feature within the area are several eddies that form off the Leeuwin Current at predictable locations, including the Perth Canyon; • South-west Shelf Province—marine life in this area is diverse and influenced by the warm waters of the Leeuwin Current;

South West Marine Park Network	IUCN zones	Natural Values
		• South-west Transition—significant features of this area include the submarine canyons that incise the northern parts of the slope and the deep-water mixing that results from the dynamics of major ocean currents when these meet the seafloor, particularly in the Perth Canyon; and • South-west Shelf Transition—consists of a narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including many endemic fauna species. Key ecological features: • Perth Canyon and adjacent shelf break, and other west-coast canyons; • Demersal slope and associated fish communities of the Central Western Province; • Western rock lobster; and • Mesoscale eddies. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Antarctic blue, pygmy blue and sperm whales, a migratory pathway for humpback, Antarctic blue and pygmy blue whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Swan River traditional owners have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial shipping, commercial fishing, recreation, including fishing, and defence training are important activities in this Marine Park.
Southern Kangaroo Island Marine Park	Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Southern Kangaroo Island Marine Park is located approximately 140 km south-west of Adelaide, adjacent to the South Australian Kangaroo Island Marine Park. This Marine Park covers an area of 630 km² extending from the South Australian State water boundary, and water depth ranges between 15 m and 100 m.
		Natural values The Marine Park includes examples of ecosystems representative of the Spencer Gulf Shelf. Seasonal winds and ocean currents interact with seafloor features to produce small seasonal upwellings that are important for biological productivity. The area is noted for its diverse seafloor communities, productivity hotspots and aggregations of marine life associated with seasonal upwellings of nutrient-rich water. A key ecological feature of this Marine Park is the Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. South Australian Native Title Services is the Native Title Service Provider for the South Australian region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation are important activities in this Marine Park. The Kangaroo Island community values the island's unique qualities and character.
South-west Corner Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI) Special Purpose (VI) Special Purpose (Mining Exclusion)	**Description** The South-west Corner Marine Park is located adjacent to the Western Australian Ngari Capes Marine Park, covering an extensive offshore area that is closest to Western Australia State waters approximately 48 km west of Esperance, 73 km west of Albany and 68 km west of Bunbury, and extends to the edge of Australia's exclusive economic zone. This Marine Park covers an area of 271,833 km² and a water depth range from less than 15 m to 6,400 m.
		Natural values This Marine Park includes ecosystems representative of: • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope incised by numerous, well-developed submarine canyons and the Diamantina Fracture Zone, a rugged area of deep seafloor comprising seamounts and many ridges and troughs. • South-west Transition—the main features of this area are the Naturaliste Plateau, the deepest submarine plateau along Australia's continental margins. The Naturaliste Plateau supports rich and diverse biological communities. Deep-water mixing results from the dynamics of major ocean currents when these meet the seafloor. • South-west Shelf Province—marine life in this area is diverse and influenced by the warm waters of the Leeuwin Current. A small upwelling of nutrient-rich water off Cape Mentelle during summer increases productivity locally, attracting aggregations of marine life. Key ecological features: • Albany Canyon group and adjacent shelf break; • Cape Mentelle upwelling; • Diamantina Fracture Zone; • Naturaliste Plateau; • Western rock lobster; and • Ancient coastline between 90 m and 120 m depth.

South West Marine Park Network	IUCN zones	Natural Values
		This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and sperm whales, a migratory pathway for Antarctic blue, pygmy blue and humpback whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Nyungar/Noongar people have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park. This Marine Park contains 10 known shipwrecks listed under the *Historic Shipwrecks Act 1976.*
		Social and economic values Tourism, commercial fishing, commercial shipping, and recreation, including fishing, are important activities in this Marine Park.
Twilight Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI)	**Description** The Twilight Marine Park is located approximately 245 km south-west of Eucla and 373 km north-east of Esperance, adjacent to the Western Australian State water boundary. This Marine Park covers an area of 4,641 km² and water depths between less than 15 m and 70 m.
		Natural values This Marine Park includes ecosystems representative of the Great Australian Bight Shelf Transition—a vast and shallow area characterised by an extensive area of flat continental shelf. There are diverse invertebrate communities inhabiting the seafloor. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Mirning and Spinifex people have responsibilities for sea country in this Marine Park. Local traditional owners recognise Kaart, Koort and Waarnginy (head, heart and talking) as bringing together the narratives and protocols that have been practiced for thousands of years and the kinship that influences all stages and cycles of life. Traditional owners have responsibility for cultural values and are focussed on the creation and regeneration of spiritual, ethical, cultural and practical benefits and opportunities for marine systems. The Goldfields Land and Sea Council is the Native Title Representative Body for the Goldfields region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park**.**
		Social and economic values Tourism and commercial and recreational fishing are important activities in this Marine Park.
Two Rocks Marine Park	Multiple Use (VI)	**Description** The Two Rocks Marine Park is located approximately 25 km north-west of Perth, to the north-west of the Western Australian Marmion Marine Park. The Marine Park covers an area of 882 km², extending from the Western Australian State water boundary, and a water depth range from 15 m to 120 m.
		Natural values This Marine Park includes examples of ecosystems representative of the South-west Shelf Transition—an area of narrow continental shelf that is noted for its physical complexity. The Leeuwin Current has a significant influence on the biodiversity of this nearshore area as it pushes subtropical water southward along the area's western edge. The area contains a diversity of tropical and temperate marine life including endemic fauna species. The inshore lagoons are thought to be important areas for benthic productivity and recruitment for marine species. Key ecological features: • Commonwealth marine environment within and adjacent to the west-coast inshore lagoons; • Western rock lobster; and • Ancient coastline between 90 m and 120 m depth. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds and Australian sea lions, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Swan River traditional owners have responsibilities for sea country in this Marine Park. Traditional owners have maintained cultural responsibilities for sea country as passed down from elders, to keep the oceans healthy, to support spiritual wellbeing and to uphold and protect obligatory cultural responsibilities for future generations. The South West Aboriginal Land and Sea Council is the Native Title Service Provider for the South-west region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, recreation, including fishing, and scientific research are important activities in this Marine Park.
Western Eyre Marine Park	National Park Zone (II) Multiple Use Zone (VI) Special Purpose Zone (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Western Eyre Marine Park is located approximately 123 km² south-west of Port Lincoln and 28 km west of Streaky Bay, adjacent to South Australia's Investigator, West Coast Bays and Nuyts Archipelago Marine Parks. This Marine Park covers an area of 57,944 km², extending from the South Australian State water boundary to the edge of Australia's exclusive economic zone, and water depths range between 15 m and more than 6,000 m.

South West Marine Park Network	IUCN zones	Natural Values
		Natural values This Marine Park includes ecosystems representative of*:* • Spencer Gulf Shelf—seasonal winds and ocean currents interact with seafloor features to produce a number of small seasonal upwellings that are important for biological productivity. The area is noted for its very diverse seafloor communities, productivity hotspots and aggregations of marine life associated with seasonal upwellings of nutrient-rich water; • Great Australian Bight Shelf Transition—a vast and shallow area, characterised by an extensive area of flat continental shelf. The invertebrate communities that inhabit the seafloor are among the most diverse in the world. The inshore areas of the bioregion are globally important for the threatened southern right whale and the Australian sea lion; and • Southern Province—includes the deepest ocean areas of the Australian exclusive economic zone, reaching depths of around 5,900 m, and is characterised by a long continental slope; numerous, well-developed submarine canyons; and extensive mid-slope terraces such as the Ceduna Terrace. Key ecological features: • Ancient coastline between 90 m and 120 m depth; • Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings; • Mesoscale eddies; • Benthic invertebrate communities of the eastern Great Australian Bight; and • Small pelagic fish of the South-west Marine Region. This Marine Park provides connectivity between deeper offshore waters and the adjacent South Australian Investigator, West Coast Bays and Nuyts Archipelago Marine Parks. Waters surrounding the Nuyts Archipelago and Investigator Group form part of the ecologically important offshore islands that protect the coastline. This Marine Park is a hotspot for productivity, with feeding aggregations of marine mammals, sharks and seabirds. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, foraging habitat for Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The far west coast region of South Australia includes over 1,000 km of coastline along the Nullarbor Cliffs of the Great Australian Bight and the Nyuts Archipelago, and supports a sea-based tradition and culture. The Mirning people have a strong connection to land and sea country of the Nullarbor, and the Wirangu people have a strong connection to land and sea country across the remainder of the far west coastal region. Fishing is woven into the beliefs and values of this region, through the use of resources such as shell fish, periwinkles, abalone and razorfish; and the sharing of traditional fishing knowledge, catch and meals. The care and protection of these waters, the coastline, marine life and resources correspond directly with cultural stories, sites and knowledge. South Australian Native Title Services is the Native Title Service Provider for the South Australian region.

South West Marine Park Network	IUCN zones	Natural Values
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing, recreation and mining are important activities in this Marine Park.
Western Kangaroo Island Marine Park	National Park Zone (II) Special Purpose Zone (Mining Exclusion) (VI) Special Purpose Zone (VI)	**Description** The Western Kangaroo Island Marine Park is located approximately 230 km south-west of Adelaide and 110 km south of Port Lincoln, adjacent to the South Australian Western Kangaroo Island Marine Park. The Marine Park covers an area of 2,335 km² and water depths range between 15 m and 165 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Spencer Gulf Shelf. Seasonal winds and ocean currents interact with seafloor features to produce a number of small seasonal upwellings that are important for biological productivity. The area is noted for its diverse seafloor communities, productivity hotspots and aggregations of marine life associated with the seasonal upwellings of nutrient rich water. Key ecological features: • The ancient coastline between 90 m and 120 m depth; and • Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for seabirds, Australian sea lions, white sharks and pygmy blue and sperm whales, and a calving buffer area for southern right whales.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. South Australian Native Title Services is the Native Title Service Provider for the South Australian region
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Tourism, commercial fishing and recreation are important activities in this Marine Park. The Kangaroo Island community values the island's unique qualities and character.

11.5.4 North Marine Park Network

Table 11-4 describes the Commonwealth marine parks within the North Marine Park Network according to the North Marine Park Network Management Plan 2018 (DNP, 2018c)

Table 11-4 Summary of Commonwealth Australian Marine Parks (AMP)s for the North Marine Park Network

North Marine Park Network	IUCN Zones	Values
Arafura Marine Park	Multiple Use Zone (VI) Special Purpose Zone (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Arafura Marine Park is located approximately 256 km north-east of Darwin and 8 km offshore of Croker Island, Northern Territory. It extends from Northern Territory waters to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 22,924 km², and a water depth range from less than 15 m to 500 m.
		Natural values The Arafura Marine Park includes examples of ecosystems representative of: • Northern Shelf Province—a dynamic region, with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity, which correspond with aggregations of marine life within this Marine Park. • Timor Transition Province—includes continental slope, canyons, ridges, terraces and the Arafura Depression. The primary drivers of biological productivity are associated with deep water upwellings at canyon heads, driven by strong tides. The key ecological feature in this Marine Park is the tributary canyons of the Arafura Depression. The canyons channel deep ocean waters, enhancing productivity and supporting large predatory fish, whale sharks, sawfish and marine turtles, deep sea sponges, and barnacles. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include internesting habitat for marine turtles and important foraging and breeding habitat for seabirds.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Yuwurrumu members of the Mandilarri-Ildugij, the Mangalara, the Murran, the Gadura-Minaga and the Ngaynjaharr clans have responsibilities for sea country in this Marine Park. These clans have native title determined over part of their sea country, which is included in this Marine Park. The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region and is assisting these native title holders in the absence of a native title Prescribed Body Corporate. It is the point of contact for this Marine Park.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
		Description

North Marine Park Network	IUCN Zones	Values
Arnhem Marine Park	Special Purpose Zone (VI)	The Arnhem Marine Park is located approximately 100 km south-east of Croker Island and 60 km south-east of the Arafura Marine Park. It extends from Northern Territory waters surrounding the Goulburn Islands, to the waters north of Maningrida. This Marine Park covers an area of 7,125 km² and water depth ranges from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northern Shelf Province. Internal currents in the region drive a net clockwise movement of nutrient-rich coastal water contributing to high biological diversity. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat and a migratory pathway for marine turtles and seabirds.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The coastal First Nations people of West Arnhem Land have responsibilities for sea country in this Marine Park. This Marine Park contains sites which are registered under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Gulf of Carpentaria Marine Park	National Park Zone (II) Special Purpose Zone (Trawl) (VI)	**Description** The Gulf of Carpentaria Marine Park is located approximately 90 km north-west of Karumba, Queensland and is adjacent to the Wellesley Islands in the south of the Gulf of Carpentaria basin. This Marine Park covers an area of 23,771 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of the Northern Shelf Province—a dynamic region with a gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within the Marine Park. Key ecological features: • Gulf of Carpentaria basin; • Gulf of Carpentaria coastal zone; • Plateaux and saddle north-west of the Wellesley Islands; and • Submerged coral reefs of the Gulf of Carpentaria. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging areas for seabirds and internesting and foraging areas for turtles.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years.

North Marine Park Network	IUCN Zones	Values
		The Lardil, Yangkaal, Kaiadlit and Gangalidda people of the Wellesley Islands have a continuing spiritual connection with their sea country and responsibilities for managing that country. They have had their native title rights recognised. Both the Thuwathu-Bujimulla Indigenous Protected Area (IPA) and the Wellesely Island Sea Claim determination extend over part of the Gulf of Carpentaria Marine Park. The Thuwathu-Bujimulla IPA includes 160 sites of cultural heritage significance and the largest collection of stone fish traps in the southern hemisphere. The Lardil, Yangkaal, Kaiadlit and Gangalidda people of the Wellesley Islands hold a wealth of cultural knowledge about their islands and sea country. They recognise the presence of the Rainbow Serpent (Thuwathu or Bujimulla) in cyclones, waterspouts and rainbows, and understand that the Rainbow Serpent has the power to cause a special type of sickness known as Markiriil in Lardil. They also consider that there are dangerous places on their country where spirits can do you harm if you are not accompanied by the right people for that area. Many prominent marine features, such as reefs, rocks, oyster banks or sand bars have their own specific names. Among these named sites are special 'story places', where significant events happened in the past, where people carry out ritual activities to maintain particular animal or plant species, or which are responsible for making tidal floods, cyclones or strong winds. The Lardil people, as the traditional owners of Mornington Island and surrounding sea country, are recognised as the people of the Wellesley Islands with the authority to speak for sea country within the Gulf of Carpentaria Marine Park. The Gulf Region Aboriginal Corporation Prescribed Body Corporate represents the Lardil, Yangkaal, Kaiadlit and Gangalidda native title holders of the Wellesley Islands and is the point of contact for this Marine Park. The Carpentaria Land Council Aboriginal Corporation is the Native Title Representative Body for the region.
		Heritage values This Marine Park contains four known shipwrecks listed under the *Historic Shipwrecks Act 1976— Douglas Mawson* (wrecked in 1923); *A.D.C*. (wrecked in 1886); *Wild Duck* (wrecked in 1876); and *Ada* (wrecked 1886). No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Limmen Marine Park	Habitat Protection Zone (IV)	**Description** The Limmen Marine Park is located approximately 315 km south-west of Nhulunbuy, Northern Territory, in the south-west of the Gulf of Carpentaria. It extends from Northern Territory waters, between the Sir Edward Pellew Group of Islands and Maria Island in the Limmen Bight, adjacent to the Northern Territory Limmen Bight Marine Park. This Marine Park covers an area of 1,399 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northern Shelf Province—a dynamic region with gently sloping shelf, topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. The key ecological feature in this Marine Park is the Gulf of Carpentaria coastal zone—nutrients from rivers flowing into the coastal zone support high productivity and diverse biota. A prominent seafloor feature within this Marine Park is the Labyrinthian Shoals, a group of sand banks, some with rocky heads, in depths of less than 1.8 m. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include internesting and foraging habitat for marine turtles.
		Cultural values

North Marine Park Network	IUCN Zones	Values
		Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Marra people have responsibilities for sea country in this Marine Park, and share song-lines that travel through this Marine Park with the Yanyuwa People. The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Wessel Marine Park	Habitat Protection Zone (IV) Special Purpose Zone (Trawl) (VI)	**Description** The Wessel Marine Park is located approximately 22 km east of Nhulunbuy, Northern Territory. It extends from Northern Territory waters adjacent to the tip of the Wessel Islands to Northern Territory waters adjacent to Cape Arnhem. This Marine Park covers an area of 5,908 km² and water depths between 15 m and 70 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northern Shelf—a dynamic region with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. The key ecological feature in this Marine Park is the Gulf of Carpentaria basin—characterised by soft sediments that support abundant and diverse communities dominated by polychaetes, crustaceans, molluscs and echinoderms, with pelagic fish species such as shark, snapper, tuna and mackerel. This Marine Park overlaps the Arafura Sill, which is a seafloor barrier that restricts movement of water into the Gulf of Carpentaria basin and forms a distinct biogeographical transition point for sessile invertebrate (e.g. sponges and corals) and fish species. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding habitat for seabirds and internesting and foraging habitat for marine turtles.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Yolŋu people have responsibilities for sea country in this Marine Park. This Marine Park contains sites which are registered under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). The Northern Land Council is the Native Title Representative Body for the Northern Territory's northern region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
		Description

North Marine Park Network	IUCN Zones	Values
West Cape York Marine Park	National Park Zone (II) Habitat Protection Zone (IV) Special Purpose Zone (VI).	The West Cape York Marine Park is located adjacent to the northern end of Cape York Peninsula approximately 25 km south-west of Thursday Island and 40 km north-west of Weipa, Queensland. It extends from Queensland State waters to the limit of Australia's exclusive economic zone. This Marine Park covers an area of 16,012 km² and water depths range from less than 15 m to 70 m.
		Natural values This Marine Park includes ecosystems representative of: • Northeast Shelf Transition—includes continental shelf, shallow water depths and high bottom salinity. It is influenced by tidal currents and has sandy substrates and reefs supporting benthic marine communities, reef-dwelling and pelagic species. • Northern Shelf Province—a dynamic region with gently sloping shelf topped with a number of pinnacles at depths ranging from 5 m to 30 m. Tidal eddies induce localised upwellings and hotspots of productivity that correspond with aggregations of marine life within this Marine Park. Key ecological features: • Gulf of Carpentaria basin; and • Gulf of Carpentaria coastal zone. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include breeding and foraging habitat for seabirds, internesting and foraging habitat for marine turtles and dugong, and foraging, breeding and calving habitat for dolphins.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. Torres Strait Islanders and coastal First Nations people of the west coast of Cape York have responsibilities for sea country in this Marine Park. The Cape York Land Council is the Native Title Representative Body for the Cape York region, which includes most of this Marine Park. The Carpentaria Aboriginal Land Council and the Torres Strait Regional Authority also perform the function of Native Title Representative Bodies for parts of this Marine Park.
		Heritage values No international, Commonwealth or national heritage listings apply to the Marine Park. The Marine Park contains one known shipwreck listed under the *Historic Shipwrecks Act 1976*.
		Social and economic values Commercial fishing, tourism, and recreation, including fishing, are important activities in this Marine Park.
Oceanic Shoals	National Park Zone (II) Multiple Use (VI) Oceanic Shoals Special Purpose (Trawl) (VI) Habitat Protection (IV)	**Description** The Oceanic Shoals Marine Park is located west of the Tiwi Islands, approximately 155 km north-west of Darwin, Northern Territory and 305 km north of Wyndham, Western Australia. It extends to the limit of Australia's exclusive economic zone. The Marine Park covers an area of 71,743 km² and water depths from less than 15 m to 500 m.
		Natural values This Marine Park includes ecosystems representative of the Northwest Shelf Transition— a dynamic environment influenced by strong tidal currents, upwellings of nutrient-rich waters, and a range of prominent seafloor features. The pinnacles, carbonate banks and shoals are sites of enhanced biological productivity.

North Marine Park Network	IUCN Zones	Values
		Key ecological features: • Carbonate bank and terrace systems of the Van Diemen Rise; • Carbonate bank and terrace system of the Sahul Shelf; • Pinnacles of the Bonaparte Basin; and • Shelf break and slope of the Arafura Shelf. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging and internesting habitat for marine turtles.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. At the commencement of this plan, there was limited information about the cultural significance of this Marine Park. The Northern Land Council and the Kimberley Land Council are the Native Title Representative Bodies for the Northern Territory's northern region, and the Kimberley region. The Tiwi Land Council collectively represents traditional owners of the Tiwi Islands.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park.
		Social and economic values Commercial fishing and mining are important activities in this Marine Park.
Joseph Bonaparte Gulf Marine Park	Multiple Use Zone (VI) Special Purpose Zone (VI) (NMR only)	**Description** The Joseph Bonaparte Gulf Marine Park is located approximately 15 km west of Wadeye, Northern Territory, and approximately 90 km north of Wyndham, Western Australia, in the Joseph Bonaparte Gulf. It is adjacent to the Western Australian North Kimberley Marine Park. This Marine Park covers an area of 8,597 km² and water depth ranges between less than 15 m and 100 m.
		Natural values This Marine Park includes examples of ecosystems representative of the Northwest Shelf Transition— a dynamic environment influenced by strong tidal currents, monsoonal winds, cyclones and wind generated waves. The large tidal ranges and wide intertidal zones near this Marine Park create a physically dynamic and turbid marine environment. The key ecological feature in this Marine Park is the carbonate bank and terrace system of the Sahul Shelf—characterised by terraces, banks, channels and valleys supporting sponges, soft corals, sessile filter feeders, polychaetes and ascidians. This Marine Park supports a range of species listed under the EPBC Act. Biologically important areas within this Marine Park include foraging habitat for marine turtles and the Australian snubfin dolphin.
		Cultural values Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. The Miriuwung, Gajerrong, Doolboong, Wardenybeng and Gija and Balangarra people have responsibilities for sea country in this Marine Park. They are represented by the following Prescribed Bodies Corporate: Miriuwung and Gajerrong Aboriginal Corporation, and Balanggarra Aboriginal Corporation. These corporations are the points of contact for their respective areas of sea country in this Marine Park. The

North Marine Park Network	IUCN Zones	Values
		Northern Land Council and the Kimberley Land Council are the Native Title Representative Bodies for the Northern Territory's northern region, and the Kimberley region.
		Heritage values No international, Commonwealth or national heritage listings apply to this Marine Park, however this Marine Park is adjacent to the West Kimberley National Heritage Place.
		Social and economic values Tourism, commercial fishing, mining, and recreation including fishing, are important activities in this Marine Park.

11.6 Threatened Ecological Communities

No Threatened Ecological Communities (TECs) as listed under the EPBC Act are known to occur within the marine waters of the NWMR, or NMR as indicated by the PMST Reports (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR). The Monsoon vine thickets (which is a TEC) occurs on the coastal dunes of Dampier Peninsula (NWMR). The subtropical and temperate coastal saltmarsh (which is a TEC) occurs within the marine water of the SWMR. Both TECs are described in **Table 11-5.**

Table 11-5 Summary of Threatened Ecological Communities within the NWMR, NMR and SWMR.

Threatened Ecological Community	Description	Conservation Values
Threatened Ecological Communities in the NWMR		
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	The ecological community represents certain occurrences of monsoon vine thickets in the southwest Kimberley region of Western Australia, predominantly restricted to the coastlines of the Dampier Peninsula from Broome in the south to One Arm Point in the north and on the northeastern coast of the Peninsula from One Arm Point to Goodenough Bay (DSEWPaC, 2013d). The TEC occurs as discontinuous patches of dense vegetation and contains approximately 23% of vascular plant species that occur on the Dampier Peninsula. The ecological community contains deciduous, semi-deciduous and evergreen perennial flora species (DSEWPaC, 2013d).	The Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula ecological community is listed as endangered (DSEWPaC, 2013d). The extent of the ecological community corresponds to country (the traditional lands) of the Bardi Jawi, Djabera Djabera, Goolarabaloo, Jabirr Jabirr, Nyul Nyul and Yawuru Indigenous people. The ecological community is of cultural significance (DSEWPaC, 2013d). Patches of the TEC operate as an ecological network with birds, mammals and frugivore species providing connectivity. The vegetation provides refuge for animals (DSEWPaC, 2013d).
Threatened Ecological Communities in the NMR		
N/A		
Threatened Ecological Communities in the SWMR		
Subtropical and Temperate Coastal Saltmarsh	The ecological community spans six state jurisdictions: Queensland (southern), New South Wales, Victoria, Tasmania, South Australia and Western Australia (south-western) (DSEWPaC, 2013c). The TEC occupies a relatively narrow strip along the Australian coast, in areas which have an intermittent or regular tidal influence. The coastal saltmarsh community consists mainly of salt-tolerant vegetation including grasses, herbs, sedges, rushes and shrubs. (Adam, 1990 cited in DSEWPaC, 2013c).	The Subtropical and Temperate Coastal Saltmarsh TEC is listed as vulnerable (DCCEEW, 2023a). This TEC consists of organisms including and associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (DSEWPaC, 2013c). A wide range of infaunal and epifaunal invertebrates and low and high tide visitors such as fish, birds and prawns also inhabit the TEC (DSEWPaC, 2013c). It is reported as an important nursery habitat for fish and prawn species. The dominant marine residents are benthic invertebrates, including molluscs and crabs (Ross et al., 2009 cited in DSEWPaC, 2013c) with insects also abundant and considered an important food source for fauna (DSEWPaC, 2013c).

11.7 Australian Whale Sanctuary

The Australian Whale Sanctuary has been established to protect all whales and dolphins found in Australian waters. Under the EPBC Act all cetaceans (whales, dolphins and porpoises) are protected in Australian waters.

The Australian Whale Sanctuary includes all Commonwealth waters from the three nautical mile State/Territory waters limit out to the boundary of the economic exclusion zone (i.e. out to 200 nm and further in some places). Within the Australian Whale Sanctuary it is an offence to kill, injure or interfere with a cetacean. Severe penalties apply to anyone convicted of such offences.

11.8 State Marine Parks and Reserves

State Marine Parks and Reserves, proclaimed under the *Conservation and Land Management Act 1984* (WA) (CALM Act), are located in State waters and vested in the WA Conservation and Parks Commission. State Marine Parks and Reserves of Western Australia have been considered, with 10 occurring in the NWMR (**Table 11-6**) and six occurring in the SWMR (**Table 11-7**).

Three new marine parks were established in 2022 in the Buccaneer Archipelago of the Kimberley. Boundaries commenced on July 1, 2023. The parks have been co-designed and are joint-managed by Traditional Owners, alongside with the Department of Biodiversity, Conservation and Attractions (DBCA, 2021b). The three new marine parks are:

- Bardi Jawi Gaarra Marine Park;
- Lalang-gaddam Marine Park (formed from the amalgamation of Lalang-garram/Camden Sound Marine Park, Lalang-garram/Horizontal Falls Marine Park, North Lalang-garram Marine Park and Maiyalam Marine Park along Western Australia's Kimberley Coast); and
- Mayala Marine Park.

There is a marine park to be defined in the Exmouth Gulf (EPA, 2022). The Exmouth Gulf Taskforce Interim Report to the Minister for Environment (DWER, 2023) outlines the values and recommended management approach of the Exmouth Gulf Marine Park.

11.9 Summary of Protected Areas within the NWMR

Table 11-6 Protected Areas within the NWMR

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
World Heritage Properties					
Shark Bay World Heritage Property	-	-	✓		**Description** The Shark Bay World Heritage Property is adjacent to the Shark Bay AMP and was included on the World Heritage List in 1991 (UNESCO, 1991). **Conservation Values** Universal values of the Shark Bay World Heritage Property include large and diverse seagrass beds, stromatolites and populations of dugong and threatened species. Inscribed under Natural Criteria vii, viii, ix and x (UNESCO, 1991).
The Ningaloo Coast World Heritage Property	-	-	✓		**Description** The Ningaloo Coast World Heritage Property is approximately 710,000 ha and lies within the Ningaloo AMP and was included on the World Heritage List in 2011 (UNESCO, 2011). **Conservation Values** Universal values of the Ningaloo Coast World Heritage Property include high marine species diversity and abundance; in particular, Ningaloo Reef supports both tropical and temperate marine reptiles and mammals. Inscribed under Natural Criteria vii and x (UNESCO, 2011).
National Heritage Places – Natural					
Shark Bay	-	-	✓		**Description** The Shark Bay National Heritage Place consists of the same area included in the Shark Bay World Heritage Property (refer above) and was established on the National Heritage List in 2007 (DEC, 2008). **Conservation Values** This national heritage place has a number of exceptional natural features, including one of the largest and most diverse seagrass beds in the world, colonies of stromatolites and rich marine life including a large population of dugongs, and also provides a refuge for a number of other globally threatened species. Shark Bay meets the national heritage listing criteria a, b, c, d, e, f, g, h and I (DEC, 2008).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
The Ningaloo Coast	-	-	✓		**Description** The Ningaloo Coast National Heritage Place consists of the same area included in the Ningaloo Coast World Heritage Property (refer above) and was established on the National Heritage List in 2010 (Commonwealth of Australia, 2010).
					Natural Values The Ningaloo Coast contains one of the best developed near-shore reefs in the world, being home to rugged limestone peninsulas, spectacular coral and sponge gardens and the whale shark. The Ningaloo Coast meets the national heritage listing criteria a, b, c, d, and f (Commonwealth of Australia, 2010).
The West Kimberley	✓	✓	-		**Description** The West Kimberley National Heritage Place covers an area of around 192,000 km^2 located in the north-west of Australia from Broome to Wyndham, and was established on the National Heritage List in 2011 (Commonwealth of Australia, 2011).
					Conservation Values The Kimberley plateau, north-western coastline and northern rivers of the West Kimberley provide a vital refuge for many native plants and animals that are found nowhere else or which have disappeared from much of the rest of Australia. In addition, Roebuck Bay is internationally recognised as one of Australia's most significant sites for migratory wading birds. This national heritage place also contains a remarkable history of First Nations occupation, with many places of indigenous sacred value. The West Kimberley meets the national heritage listing criteria a, b, c, d, e, f, g, h and I (Commonwealth of Australia, 2011).
Commonwealth Heritage Places – Natural					
Mermaid Reef – Rowley Shoals	-	✓	-		**Description** The Mermaid Reef – Rowley Shoals Commonwealth Heritage Place is located within the boundary of the Mermaid Reef Marine National Nature Reserve. The site was listed as a Commonwealth Heritage Place in 2004 (DCCCEEW, n.d.-a).
					Conservation Values The Mermaid Reef-Rowley Shoals Commonwealth Heritage Place is regionally important for the diversity of its fauna and together with Clerke

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					and Imperieuse reefs, has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fishes known previously only from Indonesian waters. Rowley Shoals is important for benchmark studies as one of the few places off the north-west coast of Western Australia which have been the site of major biological collection trips by the WA Museum (DCCCEEW, n.d.-a).
Ashmore Reef National Nature Reserve	✓	-	-		**Description** The Ashmore Reef Commonwealth Heritage Place is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, n.d-d).
					Conservation Values Ashmore Reef has major significance as a staging point for wading birds migrating between Australia and the Northern Hemisphere and supports high concentrations of breeding seabirds, many of which are nomadic and typically breed on small isolated islands. Ashmore Reef is an important scientific reference area for migratory seabirds, sea snakes and marine invertebrates. The Ashmore Reef Commonwealth Heritage Place is significant for its history of human occupation and use. The island is believed to have been visited by Indonesian fisherman since the early eighteenth century. The islands were used both for fishing and as a staging point for voyages to the southern reefs off Australia's coast (DCEEW, n.d-d).
Scott Reef and Surrounds – Commonwealth Area	✓	-	-		**Description** Scott Reef and Surrounds Commonwealth Heritage Place is located within the Western Australian Coastal Waters surrounding North and South Scott Reef. The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, n.d-e).
					Conservation Values The Scott Reef and Surrounds Commonwealth Heritage Place is regionally important for the diversity of its fauna and has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fish known previously only from Indonesian waters. Scott Reef is recognised as important for scientific research and benchmark studies due to its age, the extensive documentation of its

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					geophysical and physical environmental characteristics and its use as a site of major biological collection trips and surveys by the WA Museum and the Australian Institute of Marine Science (DCEEW, n.d-e).
Ningaloo Marine Area – Commonwealth Waters	-	-	✓		**Description** The Ningaloo Marine Area Commonwealth Heritage Place is located within the Commonwealth waters of the Ningaloo Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004 (DCEEW, n.d-f).
					Conservation Values The Ningaloo Marine Area Commonwealth Heritage Place provides a migratory pathway for humpback whales and foraging habitat for whale shark. The place is an important breeding area for billfish and manta ray. The Ningaloo Marine Area provides opportunities for scientific research relating to aspects of the area's unique features including tourism (marine ecology, whales, turtles, whale shark, fish and oceanography (DCEEW, n.d-f).
Yampi Defence Area	✓	-	-		**Description** Located 35 km south of Koolan Island the Yampi Defence Area displays a unique mosaic of geographical landforms that is unique to the region. The occurrence of such diverse landscapes within a small area is an unusual occurrence (DCCEEW, n.d.-c).
					Conservation Values The Yampi Defence Area occurs at the confluence of three biogeographic regions in the North-west of Australia. It exhibits diverse landforms, soils, and vegetation representative of the sandstone plateaux of the wetter areas of the North-west Kimberley to the broad plains and pindin scrub of the drier areas in the South-west Kimberley. The Yampi peninsula contains one of the richest amphibian records in the Kimberley. The Yampi Defence Area meets the Commonwealth heritage listing criteria a,b,c (DCCEEW, n.d.-c).
Learmonth Air Weapons Range Facility	-	-	✓		**Description** Located along the Ningaloo coastline, the Learmonth Air Weapons Range Facility was one of Australia's most active bombing ranges until 1990. It is

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					of considerable importance in documenting sea level and landform changes since the late Cenozoic period (DCCEEW, n.d.-b).
					Conservation Values The area includes an ancient reef complex and cave fauna that is of exceptional importance. The ages of the reef terraces are key to understanding the timing of uplift events. The Learmonth Air Weapons Range Facility meets the Commonwealth heritage listing criteria a,b,c (DCCEEW, n.d.-b).
Wetlands of International Importance (Ramsar)					
Ashmore Reef National Nature Reserve	✓	-	-	Ramsar	**Description** The Ashmore Reef Ramsar site is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed under the Ramsar Convention in 2002 (Commonwealth of Australia, 2002b).
					Conservation Values The Ashmore Reef Ramsar site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugong, and has the highest diversity of hermatypic (reef-building) corals on the Western Australian coast. It is known for its abundance and diversity of sea snakes. However, since 1998 populations of sea snakes at Ashmore Reef have been in decline (Commonwealth of Australia, 2002b).
					Cultural Values Indonesian fishers have regularly visited Ashmore Reef since the early eighteenth century to fish within the area and use the islands for staging points before travelling to other reefs in the region. Indonesian artefacts have been found on Cartier Island, and West, Middle and East Islands (Commonwealth of Australia, 2002b).
Eighty Mile Beach	-	✓	-	Ramsar	**Description** The Eighty Mile Beach Ramsar site covers an area of 1,250 km^2, located along a long section of the Western Australian coastline adjacent to the Eighty Mile Beach AMP (refer below) (CALM, 2003a).
					Conservation Values The Eighty Mile Beach Ramsar site includes saltmarsh and a raised peat bog more than 7,000 years old.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The site contains the most important wetland for waders in north-western Australia, supporting up to 336,000 birds, and is especially important as a land fall for waders migrating south for the austral summer (CALM, 2003a).
Roebuck Bay	-	✓	-	Ramsar	**Description** The Roebuck Bay Ramsar site covers an area of 550 km^2, located south of Broome and adjacent to the Roebuck AMP (refer below) (CALM, 2003b).
					Conservation Values The Roebuck Bay Ramsar site is recognised as one of the most important areas for migratory shorebirds in Australia. The site regularly supports over 100,000 waterbirds, with numbers being highest in the austral spring when migrant species breeding in the Palearctic stop to feed during migration. Roebuck Bay supports one of the largest known populations of Australian snubfin dolphins (*Orcaella heinsohni*)—a species with a limited distribution, vulnerable conservation status, and high cultural value (CALM, 2003a; D'Cruz *et.al.*, 2022).
Ord River Floodplain	✓			Ramsar	**Description** The Ord River Floodplain Ramsar site is in the East Kimberley region and encompasses an extensive system of river, seasonal creek, tidal mudflat, and floodplain wetlands. The site is a nursery, feeding and/or breeding ground for migratory birds, waterbirds, fish, crabs, prawns, and crocodiles. The site supports vulnerable species under the EPBC Act, including: Freshwater Sawfish (*Pristis microdon*), Green Sawfish (*Pristis zijsron*) and the Australian Painted Snipe (*Rostratula australis*). The site is also one of the only two known habitats in WA of the nationally endangered Northern River Shark (*Glyphis garricki*) (DCCEEW, 2019a).
					Conservation Values The site represents the best example of wetlands associated with the floodplain and estuary of a tropical river system in the Tanami-Timor Sea Coast Bioregion in the Kimberley. In addition, the False Mouths of the Ord are the most extensive mudflat and tidal waterway complex in Western Australia (DCCEEW, 2019a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Wetlands of National Importance (DAWE, 2019)					
Ashmore Reef	✓	-	-		**Description** Ashmore Reef is a shelf-edge platform reef located among the Sahul Banks of north-western Australia. It covers an area of 583 km^2 and consists of three islets surrounded by intertidal reef and sand flats (DCCEEW, 2019b). **Conservation Values** These islets are major seabird nesting sites with 20 breeding species recorded to date. The total bird population has been estimated to exceed 100,000 during the peak breeding season. The marine reserve also has the highest diversity of marine fauna of the reefs on the NWS and differs from other reefs and coastal areas in the region. The area meets criteria 1, 3, 4 and 5 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Mermaid Reef	-	✓	-		**Description** Mermaid Reef Marine Park covers an area of around 540 km^2, located ~280 km west north-west of Broome, and is the most north-easterly atoll of the Rowley Shoals (DCCEEW, 2019b). **Conservation Values** The reefs of the Mermaid Reef Marine Park have biogeographic value due to the presence of species that are at or close to the limit of their distribution. The coral communities are one of the special values of Mermaid Reef. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Exmouth Gulf East	-	-	✓		**Description** Exmouth Gulf East covers an area of 800 km^2 and includes wetlands in the eastern part of Exmouth Gulf, from Giralia Bay; to Urala Creek, Locker Point (DCCEEW, 2019b). **Conservation Values** The Exmouth Gulf East is an outstanding example of tidal wetland systems of the low coast of north-west Australia, with well-developed tidal creeks, extensive mangrove swamps and broad saline coastal flats.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The site is one of the major population centres for dugong in WA and its seagrass beds and extensive mangroves provide nursery and feeding areas for marine fishes and crustaceans in the Gulf. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Hamelin Pool	-	-	✓		**Description** Hamelin Pool covers an area of 900 km^2 in the far south-east part of Shark Bay (DCCEEW, 2019b).
					Conservation Values Hamelin Pool is an outstanding example of a hypersaline marine embayment and supports extensive microbialite (subtidal stromatolite) formations, which are the most abundant and diverse examples of growing marine microbialites in the world. The area meets criteria 1 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
Shark Bay East	-	-	✓		**Description** Shark Bay East covers a 250 km area of coastline comprising tidal wetlands, and marine waters less than 6 m deep at low tide, in the east arm of Shark Bay (DCCEEW, 2019b).
					Conservation Values The site is an outstanding example of a very large, shallow marine embayment, with particularly extensive occurrence of seagrass beds and substantial areas of intertidal mud/sandflats and mangrove swamp. The site supports what is probably the world's largest discrete population of dugong; it is also a major nursery and/or feeding area for turtles, rays, sharks, other fishes, prawns and other marine fauna; and is a major migration stop-over area for shorebirds. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
State Marine Parks and Reserves					
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	**Description** The North Kimberley Marine Park covers. 18,450 km^2 with its south-western boundary located ~270 km north-east of Derby (DPAW, 2016a).
					Conservation Values

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The marine park covers approximately 1,845,000 hectares. The coral reefs of the North Kimberley have the greatest diversity in Western Australia and are some of the most pristine and remarkable reefs in the world. The park surrounds more than 1,000 islands and is home to listed species such as dugongs, marine turtles, and sawfishes (DPAW, 2016a). **Social and Economic Values** The park features diverse wildlife, remarkable scenery and cultural heritage which provides excellent opportunities for tourism experiences, recreational and nature-based activities such as fishing and hunting (DPAW, 2016a). **Cultural Values** The Wunambal Gaambera, Balanggarra, Ngarinyin and Miriuwung Gajerrong people have strong and ongoing cultural connections to the North Kimberley saltwater country and rely on coastal and marine environments and resources for their cultural identity, livelihoods and economy (DPAW, 2016a).
Rowley Shoals Marine Park	-	✓	-	Sanctuary, Recreation and General Use Zones	**Description** The Rowley Shoals comprise of three reef systems, Mermaid Reef, Clerke Reef and Imperieuse Reef, all 30-40 km apart. These reef systems are located ~300 km west north-west of Broome (DEC, 2007a). **Conservation Values** The three coral atolls of the Rowley Shoals Marine Park comprise of shallow lagoons inhabited by diverse corals and abundant marine life, each covering around 80 km^2 at the edge of Australia's continental shelf (DEC, 2007a). Further offshore, the seafloor slopes away to the abyssal plain, some 6,000 m below. Undersea canyons slice the slope; these features are commonly associated with diverse communities of deep-water corals and sponges and create localised upwellings that aggregate pelagic species like tunas and billfish (DEC, 2007a). **Social and Economic Values** Due to its remote location, the Rowley Shoals has low numbers of visitors with most arriving aboard licenced charter boats. Popular activities in the area include scuba diving, recreational fishing, and boating (DEC, 2007a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Yawuru Nagulagun / Roebuck Bay Marine Park	-	✓	-	Special Purpose Zone	**Description** Yawuru Nagulagun / Roebuck Bay Marine Park is a series of intertidal flats lying on the coast to the south-east of Broome.
					Conservation Values Roebuck Bay is an internationally significant wetland and one of the most important feeding grounds for migratory shorebirds in Australia. Australian snubfin and Australian humpback dolphins frequent the waters and humpback whales pass through on their annual migration. Flatback turtles nest on the shores and are found in the bay's waters with other sea turtle species. Seagrass and macroalgae communities provide food for protected species such as the dugong and flatback turtles (DPAW, 2016b).
					Social and Economic Values The marine park is adjacent to Broome and supports tourism activities and provides an active outdoor lifestyle for the residents of the region (DPAW, 2016b).
					Cultural Values The Yawuru people have lived along the shores of Roebuck Bay for thousands of years and have a dynamic and enduring relationship with the Yawuru country. The coastline is important for cultural activities and is a place for hunting, fishing, gathering and camping for the Yawuru people (DPAW, 2016b).
Eighty Mile Beach Marine Park	-	✓	-	Sanctuary, Recreation, Special Purpose and General Use Zones	**Description** Eighty Mile Beach Marine Park covers ~2000 km^2 stretching across 220 km of coastline between Port Hedland and Broome (DPAW, 2014a).
					Conservation Values Eighty Mile Beach Marine Park is one of the world's most important feeding grounds for small wading birds that migrate to the area each summer, travelling from countries thousands of kilometres away. The marine park is a major nesting area for flatback turtles which are found only in northern Australia. Sawfishes, dugongs, dolphins and millions of invertebrates inhabit the sand and mud flats, seagrass meadows, coral reefs and mangroves (DPAW, 2014a).
					Social and Economic Values Social values of the marine park include tourism, nature-based recreational activities and commercial fishing (DPAW, 2014a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Cultural Values The Karajarri, Nyangumarta and Ngarla people have a powerful connection to the land and sea of this region. Traditional hunting and fishing are important cultural activities for the traditional owners of this marine park (DPAW, 2014a).
Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area (jointly managed)	-	✓	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area are located off the north-west coast of WA, ~1,600 km north of Perth, and cover areas of ~583 km^2, 42 km^2 and 1,147 km^2, respectively (DEC, 2007b).
					Conservation Values The Montebello/Barrow Islands marine conservation reserves have very complex seabed and island topography, resulting in a myriad of different habitats, subtidal coral reefs, macroalgal and seagrass communities, subtidal soft-bottom communities, rocky shores and intertidal reef platforms, which support a rich diversity of invertebrates and finfish. The reserves are important breeding areas for several species of marine turtles and seabirds, which use the undisturbed sandy beaches for nesting. Humpback whales migrate through the reserves and dugongs occur in the shallow warm waters (DEC, 2007b).
					Social and Economic Values Major commercial fishing and pearling occur within the area which provide employment and economic value to surrounding communities. Nature based-tourism, water sports and recreational fishing are popular recreational activities undertaken in the area (DEC, 2007b).
					Cultural Values There are no recorded seabed aboriginal sites within this park. However, it is possible there are aboriginal archaeological sites on the seabed that were created before the most recent sea level rise (DEC, 2007b).
Ningaloo Marine Park and Muiron Islands Marine Management Area (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Ningaloo Marine Park and Muiron Islands Marine Management Area are located off the North-west Cape, ~1,200 km north of Perth, and cover areas of ~2,633 km^2 and 286 km^2 respectively (CALM, 2005a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Ecological Values Ningaloo Reef is the largest fringing coral reef in Australia. Temperate and tropical currents converge in the Ningaloo region resulting in highly diverse marine life including spectacular coral reefs, abundant fishes and species with special conservation significance such as turtles, whale sharks, dugongs, whales and dolphins. The region has diverse marine communities including mangroves, algae and filter-feeding communities and has high water quality. These values contribute to the Ningaloo Marine Park being regarded as the State's premier marine conservation icon. The Muiron Islands Marine Management Area is also important, containing a very diverse marine environment, with coral reefs, filter-feeding communities and macroalgal beds. In addition, the Islands are important seabird and green turtle nesting areas (CALM, 2005a).
					Social and Economic Values The Ningaloo region has a high number of visitors enjoying the area who come to appreciate nature-based tourism which brings important economic value to the communities of the area (CALM, 2005a).
					Cultural Values The Ningaloo Reef has a long history of occupancy by aboriginal communities and aboriginal heritage sites. The Jinigudira and Baiyungu people have lived in this region for thousands of years and use coastal areas for fishing, camping and hunting of turtles and dugongs (CALM, 2005a).
Shark Bay Marine Park and Hamelin Pool Marine Nature Reserve (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Shark Bay Marine Park and Hamelin Pool Marine Nature Reserves are located 400 km north of Geraldton, covering areas of ~7,487 km^2 and 1,270 km^2, respectively (CALM, 1996).
					Conservation Values Seagrass covers over 4,000 km^2 of the Shark Bay Marine Park, with 12 different species making it one of the most diverse seagrass assemblages in the world. Dugongs regularly use this habitat, with the bay containing one of the largest dugong populations in the world. Humpback whales also use the bay as a staging post in their migration along the coast. Green and loggerhead turtles occur in the bay with Dirk Hartog Island providing the most important nesting site for loggerheads in Western Australia.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					Hamelin Pool contains the most diverse and abundant examples of stromatolites found in the world. These are living representatives of stromatolites that existed some 3500 million years ago (CALM, 1996).
					Social and Economic Values Commercial fishing and tourism are important economic values of the region. Popular recreational activities include nature-based tourism, recreational fishing and water sports (DEC, 2008).
					Cultural Values The Malgana people occupy the land and waters in the vicinity of Shark Bay and have strong cultural connection to the region. The area is important for cultural practices and for fishing, hunting and camping for the Malgana people (DEC, 2008).
Bardi Jawi Gaarra Marine Park	✓	-	-	Sanctuary, Recreation, Special Purpose Zones (biocultural conservation and cultural protection), and General use	**Description** The Bardi Jawi Gaara Marine Park is located in the West Kimberley region surrounding the northern part of the Dampier Peninsula and the western islands of the Buccaneer Archipelago covering areas of ~2,040 km^2.
					Conservation Values The Bardi Jawi Gaara Marine Park has a tidal range of 11 m, which is the highest in Australia. The mangrove lined creeks, intertidal and fringing reef areas that encompass the coastline and islands are ecologically important and host a vast number of plants and animals that have adapted to the unique area. Migratory marine mammals including humpback whales migrate to the areas between June and November each year to birth their young. Dugongs visit the area in the cooler months from May to July (DBCA 2022a).
					Social and Economic Values Commercial fishing, pearling and aquaculture are important economic activities that occur within this region. The area is a popular tourism destination and hosts a number or recreational activities and water sports (DBCA 2022a).
					Cultural Values The Bardi and Jawi people have a significant connection to the animals, sites and places within this region which are connected by stories and songlines. The sea country is used for hunting, fishing, cultural activities and business (DBCA 2022a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
Lalang-gaddam Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** Amended joint management plan for the Lalang-gaddam / Camden Sound, Lalang-gaddam / Horizontal Falls and North Lalang-gaddam marine parks, and indicative joint management plan for the proposed Maiyalam Marine Park. The Lalang-gaddam Marine Park is located in the Kimberley region of Western Australia and adjacent to Derby and the Shire of Wyndham. The Class A marine park covers ~13,085 km^2 (DBCA 2022b).
					Conservation Values The Lalang-gaddam / Camden Sound Marine Park is the most important humpback whale nursery in the Southern Hemisphere. It also features the spectacular coastal Montgomery Reef. The marine park is home to six species of threatened marine turtle. Australian snubfin and Indo-Pacific humpback dolphins, saltwater crocodiles, manta rays, several species of protected sawfish, and the world's large population of dugongs (~12,000). The Lalang-gaddam Marine Park's most celebrated attraction, The Horizontal Falls is created by massive tides of up to 10 m and narrow gaps in two parallel tongues of land meaning the tide falls faster than the water can escape, producing 'horizontal falls'. There are also islands with fringing coral reefs and mangrove-lined creeks and bays. This Marine Park has a number of islands fringed with coral reef and has been identified as an ecological hotspot and supports more than 1% of the world's population of brown boobies, with up to 2,000 breeding pairs. Approximately 500 pairs of crested terns also nest on the island (DBCA 2022b).
					Social and Economic Values This Marine Park has spectacular scenery which attracts a number of tourists and generates approximately $563 million annually. Recreational fishing and recreational maritime activities are popular within ths Marine Park. Commercial fisheries can operate within the waters of this Marine Park, however many do not regularly fish within this area. Pearling and aquaculture occurs within this Marine Park and provides economic value for the region (DBCA 2022b).
					Cultural Values

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description and Values
	Browse	NWS/S	NW Cape		
					The area is of cultural significance to the Dambeemangarddee people who have lived on the land and cared for land and sea country for tens of thousands of years. Some animals such as the barramundi and rock cod have particular cultural significance and are sacred animals to the Dambeemangarddee people. Numerous coastal and marine plants continue to be an important food source for the traditional owners of this Marine Park (DBCA 2022b).
Mayala Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Mayala Marine Park is a Class A reserve located in the West Kimberley region and covers ~3,150 km^2 (DBCA 2022c).
					Conservation Values The Mayala Marine Park has a tidal range of 11 m, the highest in Australia. The mangrove lined creeks, intertidal and fringing reef areas that encompass the coastline and islands are ecologically important and host a vast number of plants and animals that have adapted to the unique area. The seagrass communities provide habitat and food for many species including turtles and dugongs. Migratory marine mammals including humpback whales migrate to the areas between June and November each year to birth their young. Dugongs visit the area in the cooler months from May to July (DBCA 2022c).
					Social and Economic Values Due to the extraordinary natural values of the area, the number of visitors to the area has continued to grow over the years. Popular activities within the park include fishing, boating, and wildlife watching. The waters of this area provide optimal conditions for commercial fishing, pearling and aquaculture (DBCA 2022c).
					Cultural Values The area is of exceptional cultural significance to the Malaya people who are true saltwater people and use both land and sea resources and have a strong connection to the land, animals and plants of the region. This Marine Park has many sacred sites that occur on land and sea which include artefacts, fish traps, and man-made structures. This Marine Park is culturally significant to the Malaya people who care for country and use this Marine Park for fishing, hunting and camping (DBCA 2022c).

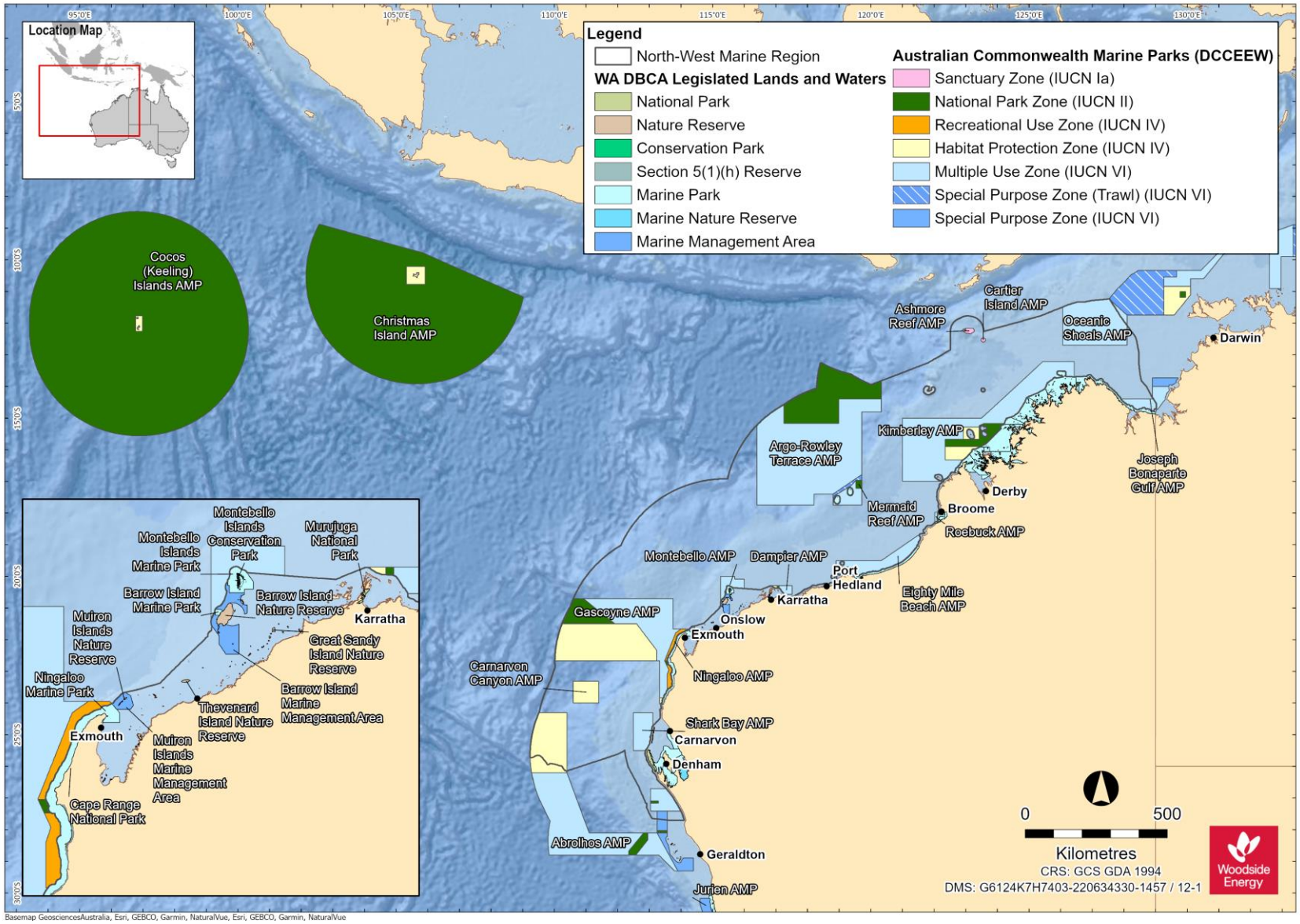


Figure 11-1 Commonwealth and State Marine Protected Areas for the NWMR and Indian Ocean Territories (data source: GA, 2024)

11.10 Summary of Protected Areas within the SWMR

Table 11-7 Protected Areas within the SWMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
World Heritage Properties		
Australian Convict Sites (Fremantle Prison)		**Description** Fremantle Prison contains well preserved remnants of the earliest phase of European settlement of Western Australia. The Prison includes 16 intact convict-built structures surrounded by a six-metre-high limestone perimeter wall. The prison is one of the largest surviving convict establishments in the world (DCCEEW, 2021a).
		Conservation Values The Australian Convict Sites represent the global phenomenon of convictism—- the forced migration of convicts to penal colonies in the 18th and 19th centuries (DCCEEW, 2021a).
National Heritage Places—- Natural		
N/A		
Commonwealth Heritage Places—- Natural		
Garden Island		**Description** Garden Island, and in particular the Cliff Point Historic Site, is highly valued by the community for its cultural associations as the site of first settlement in Western Australia. The absence of feral predators means that Garden Island provides a significant refuge for animals vulnerable to predation on the mainland (DAWE, 2004).
		Conservation Values It is likely that Indigenous values exist at this place. As yet these have not been identified, documented or assessed for National Estate significance by the Australian Heritage Commission. Species of particular interest include the Tammar wallaby (*Macropus eugenii*), carpet python (*Morelia spilota*), and the lined skink (*Lerista lineata*). The parabolic sand dunes on the western side of the island are among the best-preserved dunes of the Quindalup soil unit (DAWE, 2004).
Wetlands of International Importance (Ramsar)		
Becher Point Wetlands	Ramsar	**Description** Beecher Point Wetlands is a system of about sixty small wetlands located near Rockingham in south-west WA, covering an area of around 7 km^2. The site was listed under the Ramsar Convention in 2001 (DPAW, 2014b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Conservation Values The wetlands support sedgelands, herblands, grasslands, open-shrublands and low open-forests. The sedgelands that occur within the linear wetland depressions of the Ramsar site are a nationally listed threatened environmental community. At least four species of amphibians and 21 species of reptiles have been recorded on the site. The site also supports the southern brown bandicoot. The site meets criteria 1 and 2 of the Ramsar Convention (DPAW, 2014b).
Forrestdale and Thomsons Lakes	Ramsar	**Description** Forrestdale Lake is located in the City of Armadale and Thomsons Lake is located in the City of Cockburn both of which lie within the southern Perth metropolitan area, in Western Australia. The site was listed under the Ramsar Convention in 1990 (CALM, 2003c).
		Conservation Values The lakes are surrounded by medium density urban development and some agricultural land. The sediments of Thomsons Lake are between 30,000 and 40,000 years old, which are the oldest lake sediments discovered in WA to date. These lakes are the best remaining examples of brackish, seasonal lakes with extensive fringing sedgeland, typical of the Swan Coastal Plain. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention (CALM, 2003c).
Peel-Yalgorup System	Ramsar	**Description** The Peel-Yalgorup System, located adjacent to the City of Mandurah in Western Australia, is a large and diverse system of shallow estuaries, coastal saline lakes and freshwater marshes. The site was listed under the Ramsar Convention in 1990 (CALM, 2003d).
		Conservation Values The Peel-Yalgorup System Ramsar site is the most important area for waterbirds in south-western Australia. It supports a large number of waterbirds, and a wide variety of waterbird species. It also supports a wide variety of invertebrates, and estuarine and marine fish. The system also includes an occurrence of thrombolites. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention (CALM, 2003d).
Vasse-wonnerup system	Ramsar	**Description** The Vasse-Wonnerup System Ramsar wetland is situated in the Perth Basin, south-western Western Austraia. The site was listed under the Ramsar Convention in 1990 (DPAW, 2014b).
		Conservation Values The Vasse-Wonnerup System is an extensive, shallow, nutrient-enriched wetland system of highly varied salinities. Large areas of the wetland dry out in late summer. The Vasse-Wonnerup System supports tens of thousands of resident and migrant waterbirds of a wide variety of species. More than 80 species of waterbird have been recorded in the System such as

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		red-necked avocets and black-winged stilts, wood sandpiper, sharp-tailed sandpiper, long-toed stint, curlew sandpiper and common greenshank. 13 waterbird species are also known to breed at the Ramsar site, including the largest regular breeding colony of black swans in south-western Australia. The site meets criteria 5 and 6 of the Ramsar Convention (DPAW, 2014b).
Lake Warden System	Ramsar	**Description** The Lake Warden System Ramsar site is located adjacent to Esperance, south-western Australia. It is a system of saline lakes, lagoons and marsh areas behind beach-front dunes and at least one relatively narrow connection to the sea. The site was listed under the Ramsar Convention in 1990.
		Conservation Values The wetlands within the Lake Warden System form a system of inter-connected lakes and coastal brackish/saline lagoons connected by channels. It provides a significant habitat, nursery and refuge for waterbirds. Supporting up to 20,000 birds regularly. The System supports over 1% of Hooded Plovers in south-western Australia who breed regularly at the Lake Warden System. It meets criteria 1,5 and 6 of the Ramsar Convention (DEC, 2009b).
Wetlands of National Importance (DAWE, 2019)		
Rottnest Island Lakes		**Description** The Rottnest Island Lakes site is the cluster of 18 lakes and swamps on the north-east part of Rottnest Island (DCCEEW, 2019b).
		Conservation Values An outstanding example of a series of lakes/swamps of varied depth and salinity located on an offshore island; the only island among 200 plus in WA exceeding 10 ha in area, that has a salt-lake complex; the only known example of seasonally meromictic lakes in Australia. The area meets criteria 1, 2, 3 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).
State Marine Parks and Reserves		
Jurien Bay Marine Park	Sanctuary, Special Purpose and General Use Zones.	**Description** The Jurien Bay Marine Park is located on the central west coast of WA ~200 km north of Perth and covers an area of 824 km^2 (CALM, 2005b).
		Ecological Values The Jurien Bay region is dominated by five major marine habitats: seagrass meadows, bare or sparsely vegetated mobile sand, shoreline and offshore intertidal reef platforms, subtidal limestone reefs, and reef pavement. An extensive limestone reef system parallel to the shore has created a huge shallow lagoon that provides perfect habitat for Australian sea lions, dolphins and a myriad of juvenile fish. Extensive seagrass meadows inside the reef shelter many marine animals such as western rock lobsters, octopus and cuttlefish that make up the diet of young sea lions. The marine park also surrounds dozens of ecologically important islands that contain rare and endangered animals found nowhere else in the world (CALM, 2005b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Social and Economic Values Commercial fishing for rock lobster has the highest economic value of any single species commercial fishery in Australia and is important for the economy of the Jurien Bay region. Recreational water activities such as fishing, boating, surfing, diving, and wind surfing are popular within the area (CALM, 2005b).
		Cultural Values The Nyungar people have occupied the land and waters in this region and depended on coastal resources for more than 30,000 years. There are burial sites, middens and other sites of significance listed within the region (CALM, 2005b).
Marmion Marine Park	Sanctuary, Recreation and Special Use Zones.	**Description** The Marmion Marine Park lies within State waters between Trigg Island and Burns Beach and encompasses a coastal area of ~95 km^2. Marmion Marine Park was the State's first marine park, declared in 1987 (CALM, 1992).
		Ecological Values The marine park has a number of sanctuary zones including Little Island, The Lumps and the Boyinaboat Reef protecting a variety of habitats from limestone reefs, seagrass beds and clear shallow lagoons that support a diversity of marine life. In addition, there are the general use zone and the Waterman Recreation Area. The marine park contains important habitat for the endemic Australian sea lion, an array of seabird species, and migratory whales are regular visitors (CALM, 1992; DPAW, 2016c).
		Social Values The marine park is popular for recreational water activities including boating, swimming, kayaking, snorkelling, whale watching, kite and windsurfing. Scuba diving and freediving is common at the Boyinaboat Reef which is located close to Hillary's Boat Harbour. Recreational fishing is permitted in most areas (DPAW, 2016c).
Swan Estuary Marine Park	Special Purpose and Nature Reserve Zones.	**Description** Three biologically important areas of Perth's Swan River make up the Swan Estuary Marine Park, including Alfred Cove, Pelican Point and Crawley. These three sites cover a total area of 3.4 km^2 (CALM, 1999).
		Ecological Values The sand flats, mud flats and beaches at the three locations of the Swan Estuary Marine Park provide the only remaining significant feeding and resting areas in the Swan Estuary for trans-equatorial migratory wading and waterbirds. This Marine Park and adjacent reserves also provide habitat for a diverse assemblage of aquatic and terrestrial flora and fauna (CALM, 1999).
		Social and Economic Values

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Nature-based wildlife tourism operates in the area and this Marine Park supports commercial net fishing. Recreational activities that occur within the area include fishing, bird watching, kayaking, windsurfing, boating, and sightseeing (DBCA, 2023).
		Cultural Values The Whadjuk people are the traditional owners of the land and waters of Swan Canning Estuary and have frequented the waters of this park for many years. The estuarine and terrestrial habitats provide a source of fish, shellfish, reptiles and birds for hunting (CALM, 1999; DBCA, 2023).
Shoalwater Islands Marine Park	Sanctuary, Special Purpose and General Use Zones.	**Description** The Shoalwater Islands Maine Park is located adjacent to Rockingham on the south-west coast of Western Australia, ~50 km south of Perth and covers an area of ~66 km^2 (DEC, 2007c).
		Ecological Values The Shoalwater Islands Marine Park consists of a complex seabed and coastal topography consisting of islands, limestone ridges and reef platforms, protected inshore areas and deeper basins, sandbars and beaches, and is home to five species of cetacean and 14 species of sea and shore bird. The waters of this Marine Park are also used to access feeding grounds for the little penguin (*Eudyptula minor*) colony on Penguin Island, which is close to the northernmost limit of the species' range and is the largest known breeding colony in Western Australia (DEC, 2007c). A recent study has also reported a recurrent aggregation of scalloped hammerheads (*Sphyrna lewini*) within this Marine Park (López et al., 2022).
		Social and Economic Values Commercial fisheries target a number of species within the area and this Marine Park also supports a mussel farming industry. Tourism is a popular activity within this Marine Park and includes water sports such as scuba diving, snorkelling, sailing, kayaking, kite surfing, and windsurfing. Recreational fishing is popular in this area and is likely to increase. The diversity of this Marine Park biota makes this Marine Park important for scientific research and education among tertiary institutions, schools and outdoors organisations (DEC, 2007c).
		Cultural Values This Marine Park is of cultural significance to the Gnaarla Karla Booja people who are the traditional owners and have frequented this Marine Park for thousands of years. The Gnaarla Karla Booja people have continued to use this Marine Park for fishing and hunting. Shoalwater and Garden Island areas are significant parts of the story of creation and there are a number of sites adjacent to and within this Marine Park that are registered as culturally significant (DEC, 2007c).
Ngari Capes Marine Park	Sanctuary, Special Purpose and Recreation Zones.	**Description** The Ngari Capes Marine Park is located off the south-west coast of Western Australia, ~250 km south of Perth, covering ~1238 km^2 (DEC, 2013).
		Ecological Values The Ngari Capes Marine Park consists of a complex arrangement of sandy bays, high energy limestone and granite reefs bordered by headlands and cliffs and two weathered capes. Coral

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		communities consist of both tropical and temperate species. Cetaceans and pinnipeds are resident in and/or transient through this Marine Park as well as a diverse range of seabirds and shorebirds (DEC, 2013).
		Social and Economic Values A diverse range of commercial fisheries and aquaculture occur within and around this Marine Park targeting species such as abalone, salmon, sharks, demersal finish, baitfish, and western rock lobster. This Marine Park offers a wide range of attractions for marine based tourism which include shore-based and boat-based whale watching tours and dive and snorkel tours. Recreational activities that occur within this Marine Park include diving, fishing, snorkelling and wildlife watching (DEC, 2013).
		Cultural Values The Pibelmen and Wardani people occupy the lands adjacent to this Marine Park and utilise the coastline for fishing, hunting, ceremonial activities and resource gathering as they have continued to do for thousands of years. At least 45 sites of Indigenous significance have been identified within or adjacent to this Marine Park. Many marine species including mammang borungar (whale) and kalda (sea mullet) are culturally significant to the Indigenous people of the southwest region (DEC, 2013).
Walpole and Nornalup Inlets Marine Park	Recreation Zone.	**Description** The Walpole and Nornalup Inlets Marine Park is located adjacent to the towns of Walpole and Nornalup on the south coast of Western Australia, ~120 km west of Albany, and covers ~14 km^2 (DEC, 2009a).
		Conservation Values The Walpole and Nornalup Inlets Marine Park consists of a geologically complex lagoonal estuarine system comprising three significant rivers and two connected inlets that are permanently open to the ocean. Approximately 40 marine and estuarine finfish species commonly inhabit the inlet system, as well as a variety of shark and ray species and numerous seabirds and shorebirds. The sandy beaches and shoreline vegetation of the inlet system are of high ecological and social importance to this Marine Park (DEC, 2009a).
		Social Values The diversity of wildlife and easily accessible terrestrial, estuarine, and coastal scenery has enhanced nature-based tourism within the area. Popular recreational activities that occur within this Marine Park include boating, fishing, swimming, hiking, bird watching, and wildlife watching (DEC, 2009a).
		Cultural Values Estuaries are significant hunting, fishing and gathering areas for Minang people of south-western Australia who have a strong spiritual connection to the area. Aboriginal artefact scatters and other listed areas of cultural significance have been found within and adjacent to this Marine Park (DEC, 2009a).

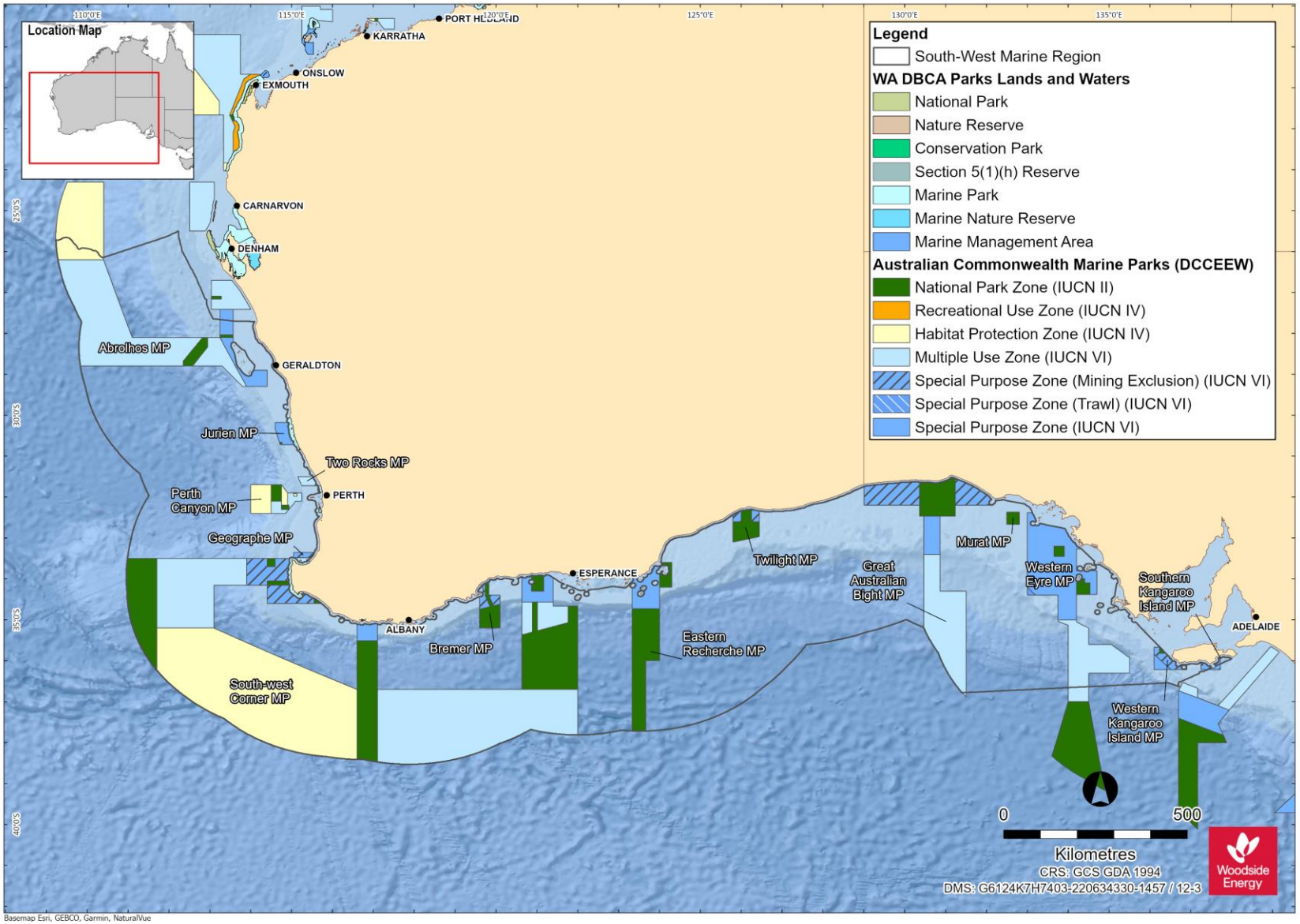


Figure 11-2 Commonwealth and State Marine Protected Areas for the SWMR (data source: GA, 2024)

11.11 Summary of Protected Areas within the NMR

Table 11-8 Protected Areas within the NMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
World Heritage Properties		
Kakadu National Park		**Description** Kakadu National Park is a living landscape with exceptional natural and cultural values. It is the largest National Park in Australia and preserves the greatest variety of ecosystems on the Australian continent including extensive areas of floodplains, mangroves, tidal mudflats, coastal areas and monsoon forests. The park was inscribed on the World Heritage list in three stages over 11 years. It is located in tropical north Australia covering a total area of 19,810 km^2 (Director of National Parks, 2016).
		Ecological Values The conservation values reflect the WHA Criterion: (i), (vi), (vii) and (ix): Natural features relate to Criterion (vii) – the remarkable contrast between the internationally recognised Ramsar-listed wetlands and the spectacular rocky escarpment and its outliers and Criterion (ix) – four major river systems of tropical Australia and floodplains that are dynamic environments, shaped by changing sea levels and big floods every wet season. These floodplains illustrate the ecological and geomorphological effects that have accompanied Holocene climate change and sea level rise. Kakadu National Park contains important and significant habitats supporting a diverse range of flora and fauna. Coastal areas of the park are dominated by mudflats which are mostly lined by mangroves which support breeding and nursery grounds for a variety of animals. The threatened flatback turtles nest on Field Island which is within the park. Kakadu National Park is a key habitat for threatened species including one species of river shark, two sawfish species and two inshore dolphin species (Director of National Parks, 2016).
		Social Values Kakadu National Park is a popular tourist destination which provides important economic value to the region through boat and fishing tours and wildlife tours. Commercial tours operate within the area which provides employment opportunities for local communities. Popular recreational activities within the park include bushwalking, camping, recreational fishing and boating, swimming, wildlife watching, and viewing culturally significant sites (Director of National Parks, 2016).
		Cultural Values The Bininj/Mungguy people are the traditional owners of Kakadu National Park and have had longstanding custodianship and spiritual connection with the Kakadu region and continue to use the park for cultural practices. Kakadu holds one of the world's greatest concentrations of rock art sites and there is thought to be up to 15,000 sites in total with some sites estimated to be over 20,000 years old (Director of National Parks, 2016).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
National Heritage Places–- Natural		
Kakadu National Park		Refer to World Heritage property description and values above
Commonwealth Heritage Places–- Natural		
N/A		
Wetlands of International Importance (Ramsar)		
Kakadu National Park		**Description** Australian Ramsar site number 2. The stage 1 and 2 Ramsar sites, established in 1980, 1985 and 1989, respectfully were combined into a single Ramsar site in 2010 (BMT WBM, 2010).
		Conservation Values The Kakadu National Park Ramsar site straddles the western edge of the Arnhem Land Plateau encompassing a range of landforms and extensive floodplains. It is a mosaic of contiguous wetlands comprising the catchments of two large river systems, the East and South Alligator rivers and encompasses extensive tidal mudflat areas. It is an internationally important site for migratory shorebirds as part of the EAAF (BMT WBM, 2010).
Cobourg Peninsula		**Description** Australian Ramsar site number 1 established in 1974. This Ramsar site includes freshwater and extensive intertidal areas but excludes subtidal areas. It is in a remote location and there has been minimal human impact on the site (BMT WBM, 2011).
		Conservation Values The wetlands encompassed in the Ramsar site are some of the better protected and near-natural wetlands in the bioregion and there is a diverse array of wetland in a confined area. The site supports important turtle nesting habitat and habitat for coastal dolphin species and is an internationally significant migratory shorebird habitat as part of the EAAF and an important location for seabird breeding colonies (BMT WBM, 2011).
Wetlands of National Importance (DAWE, 2019)		
Southern Gulf Aggregation		**Description** The site is a complex continuous wetland aggregation in the Gulf of Carpentaria, covering an area of ~5,460 km^2 located 58 km east of Burketown, Queensland (DCCEEW, 2019b).
		Conservation Values The Southern Gulf Aggregation is the largest continuous estuarine wetland aggregation of its type in northern Australia. It is one of the three most important areas for shorebirds in Australia. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia (DCCEEW, 2019b).

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description and Values
		Social Values The area is an important site for recreational barramundi fishing and is a popular site for ecotourism (DCCEEW, 2019b).
Territory Marine Parks and Reserves		
Cobourg Marine Park	II, IV, VI	**Description** Cobourg Marine Park covers an area of 2,290 km^2 and is located in the waters surrounding the Cobourg Peninsula ~220 km north-east of Darwin. This Marine Park is part of the larger Garig Gunak Barlu National Park. Garig Gunak Barlu National Park includes both this Marine Park and the Cobourg Sanctuary (Northern Territory Government, 2011)
		Conservation Values Cobourg Marine Park is located in the Cobourg and Van Diemen Gulf marine bioregions with the northern portion of the Marine Park covered by the Cobourg marine bioregion and the southern portion covered by the Van Diemen Gulf marine bioregion. This Marine Park is characterised by a number of deeply incised bays and estuaries on its northern shores. These bays are ancient river valleys that were drowned during periods of sea level rise and provide a varied environment and habitat that is quite distinct from the open water areas of the Marine Park. The areas of the Marine Park that have been studied and where extensive collections have been made indicates that the Marine Park supports rich and diverse marine life including live coral reefs, seagrass, diverse reef and pelagic fish populations, saltwater crocodiles, and six species of threatened marine turtles and dugong (Northern Territory Government, 2011).
		Social and Economic Values A variety of commercial fisheries, aquaculture and pearling occur within this Marine Park. The Marine Park has visitors who stay within the Cobourg sanctuary, sailors who moor in the area and guests who stay at onsite accommodation. Water sports such as fishing, boating, sailing, scuba diving, recreational fishing, sightseeing and wildlife viewing are popular activities undertaken in the Marine Park (Northern Territory Government, 2011).
		Cultural Values The Cobourg people have a longstanding connection to the lands and seas of Cobourg Marine Park. The Marine Park is a culturally significant place for the Cobourg people to practice customary activities including ceremonies and fishing and hunting of marine resources (Northern Territory Government, 2011).

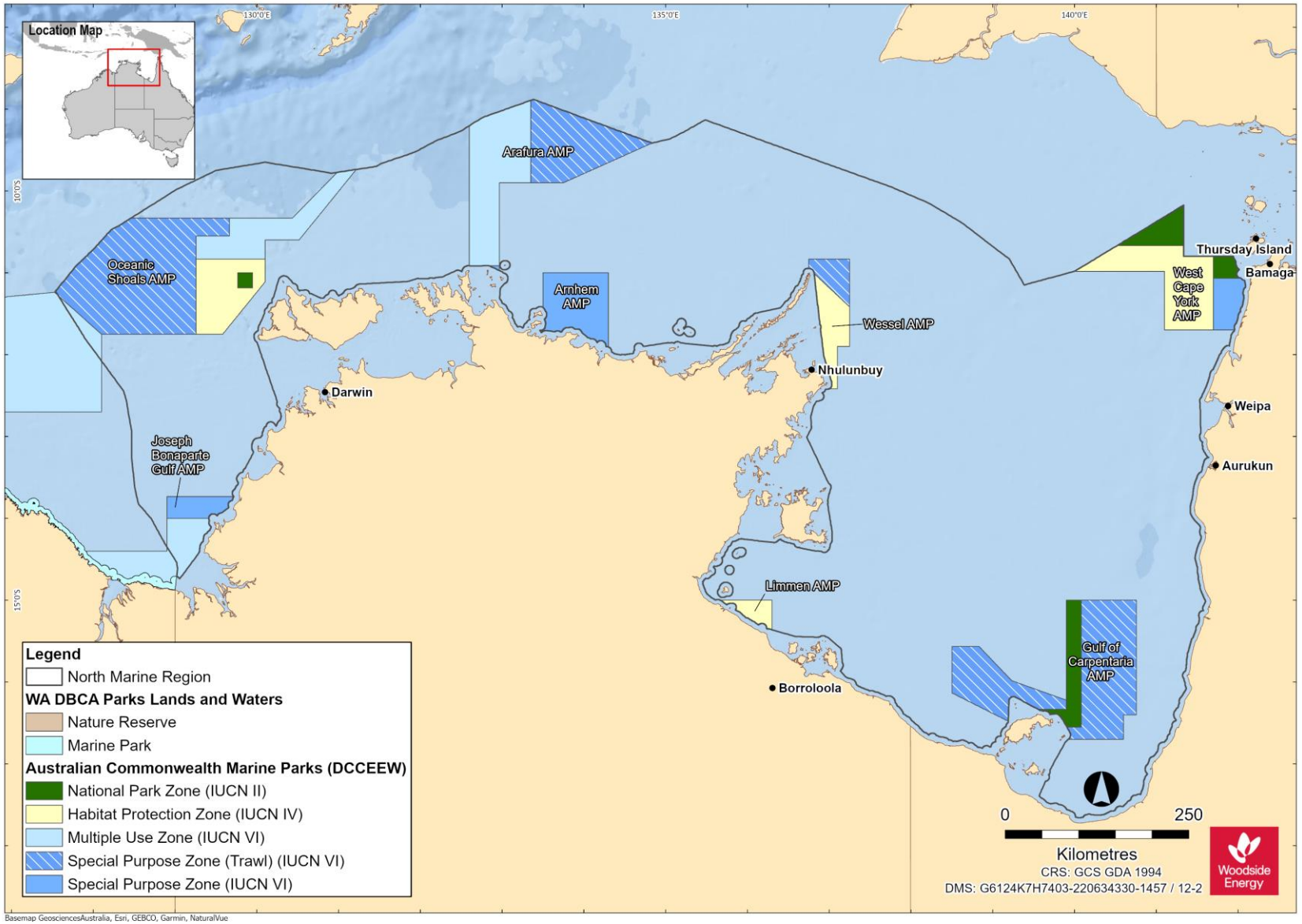


Figure 11-3 Commonwealth and State Marine Protected Areas within the NMR (data source: GA, 2024)

12. SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

This section summarises the information relating to the socio-economic and cultural environment of the regions offshore of Western Australia, with a focus on the NWMR and to a lesser extent the SWMR and NWR.

12.1 Cultural Values and Heritage

Woodside's approach to Cultural Values and Heritage management reflects our publicly available **First Nations Communities Policy** (Woodside 2022). This policy is underpinned by core principles that ensure our management of cultural heritage is thorough, transparent and supported by consultation and continued engagement with First Nations communities. Our approach to the identification, management and protection of cultural heritage is consistent with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), engaging with First Nations communities in ways that reflect the principles of seeking Free, Prior and Informed Consent (FPIC). Where heritage is concerned Woodside seeks to avoid impact, or if avoidance is not possible, to minimise and mitigate impact through consultation with relevant First Nations communities. We seek to ensure Traditional Owners and Custodians are central to heritage management so that cultural values are understood and remain protected.

Australia ICOMOS (International Council on Monuments and Sites) is a non-government peak body for cultural heritage professionals formed as a national committee for ICOMOS (international). Australia ICOMOS' mission is to lead cultural heritage conservation in Australia by issuing standards and practice notes. Woodside understands heritage value to mean the cultural significance of a place to an individual or group in line with the Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia ICOMOS 2013) (Burra Charter), and associated practice notes. A cultural feature, is therefore comparable to the Burra Charter term "fabric" and refers to a place's elements, fixtures, contents and objects which have cultural values. Although these features are necessarily physical, the place they inhabit or comprise may have tangible or intangible dimensions (Australia ICOMOS 2013).

12.1.1 Native Title

Woodside uses established systems, such as native title, to identify First Nations groups that may have functions, interests or activities that may be affected. While acknowledging that cultural features and heritage values may exist outside of the native title framework, native title claims, determinations and ILUAs are defined under the *Native Title Act 1993* (Cth). Woodside considers this to be the broadest extent over which First Nations groups have claimed native title rights and interests.

Native title claims are applications made to the Federal Court under the Native Title Act for a determination or decision about native title in a particular area. A claim is made by a native title claim group which asserts it holds native title rights and interests in an area of land and/or water, according to its traditional laws and customs. By making a claim, the native title claim group seeks a decision that native title exists so that its native title rights and interests are recognised by the common law of Australia. This is called a native title determination. A determination is a decision by a recognised body, such as the Federal Court or High Court of Australia, that native title either does or does not exist in relation to a particular area (Native Title Tribunal).

A requirement to establishing a positive determination of native title in court is proving that there is an organised society that occupied the land and/or waters at the time of British annexation. The requirement of an 'organised society' is set out by Justice Toohey in the historic judgment of Mabo v Queensland (No 2)) [1992] HCA 23; (1992) 175 CLR 1 ('Mabo'). Justice Toohey had the following to say (at 187):

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

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

Indigenous Land Use Agreements (ILUAs) are voluntary agreements between native title parties and other people or bodies about the use and management of land and/or waters and are registered by the Native Title Registrar in the Register of ILUAs. An ILUA can be made over areas where:

- native title has been determined to exist in at least part of the area; or
- a native title claim has been made; or
- where no native title claim has been made.

While registered, ILUAs operate as a contract between the parties, including relevant native title holders (Native Title Tribunal).

The Native Title Act provides for a Representative Aboriginal/Torres Strait Islander Body (Native Title Representative Body) to be recognised by the Commonwealth Minister for an area. Native Title Representative Bodies have specialist functions set out in the Native Title Act within the area for which they are the Native Title Representative Body. However, the functions of a Native Title Representative Body are such that they do not hold details on the cultural features or heritage values of an area and therefore do not inform Woodside's understanding of heritage values or cultural features.

12.1.2 Coastal First Nations Groups

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

Woodside understands from engagement with stakeholders that extending a native title group's responsibility to areas which those groups have elected to not include in their claims or ILUAs can have significant cultural consequences for groups and individuals. This may also, over time, build expectations in the broader community that a group is responsible for maintaining environmental values in areas for which they do not hold traditional knowledge.

Woodside acknowledges that a First Nations group's relative proximity to any Operational Areas is not necessarily a meaningful indicator of the connection to the area and providing advice over such areas can be culturally dangerous. As a result, caution must be used when conducting broader engagement.

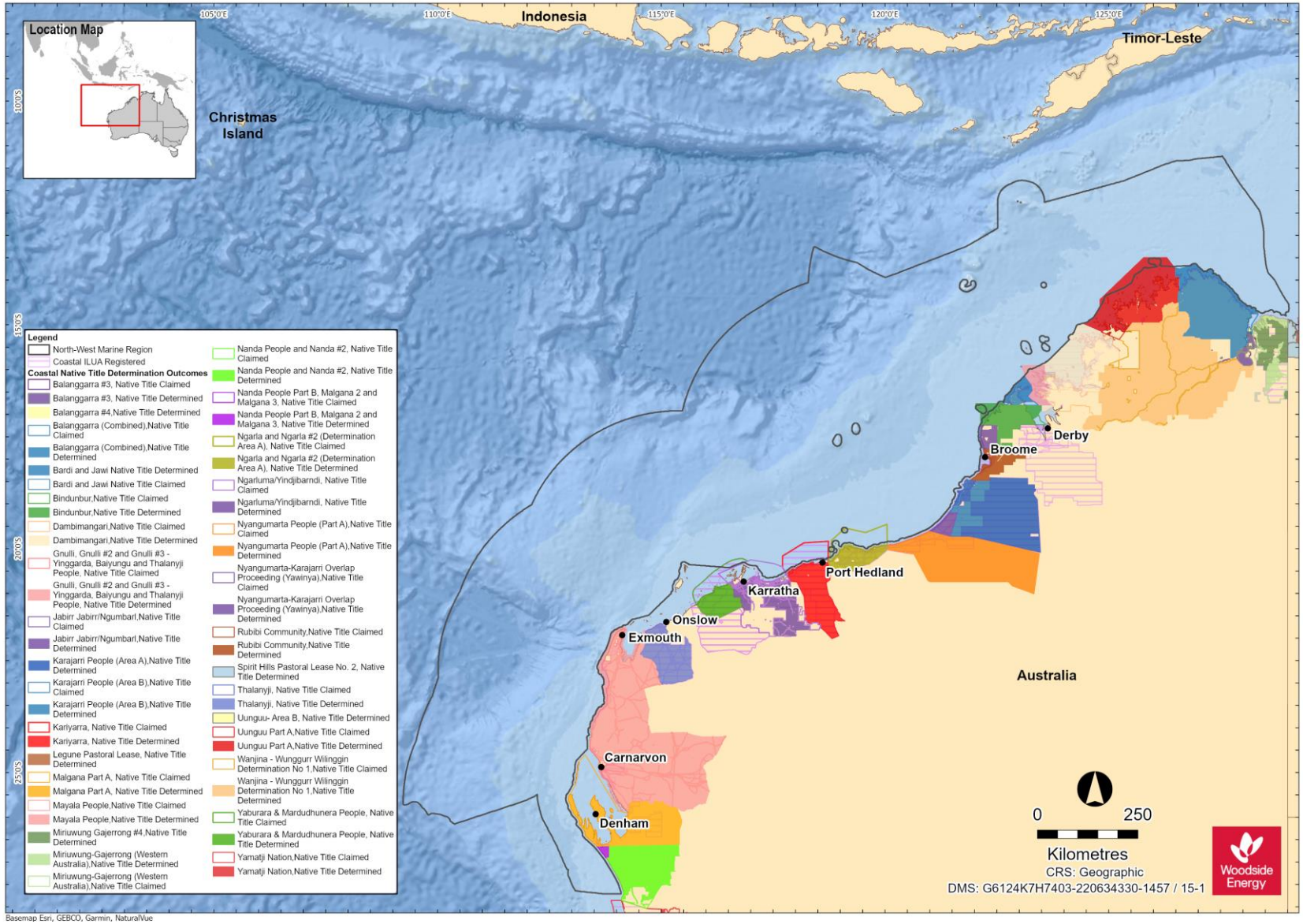


Figure 12-1 Coastal Native Title Claims/ Determinations and ILUAs in the NWMR (data source: DPLH 2024)

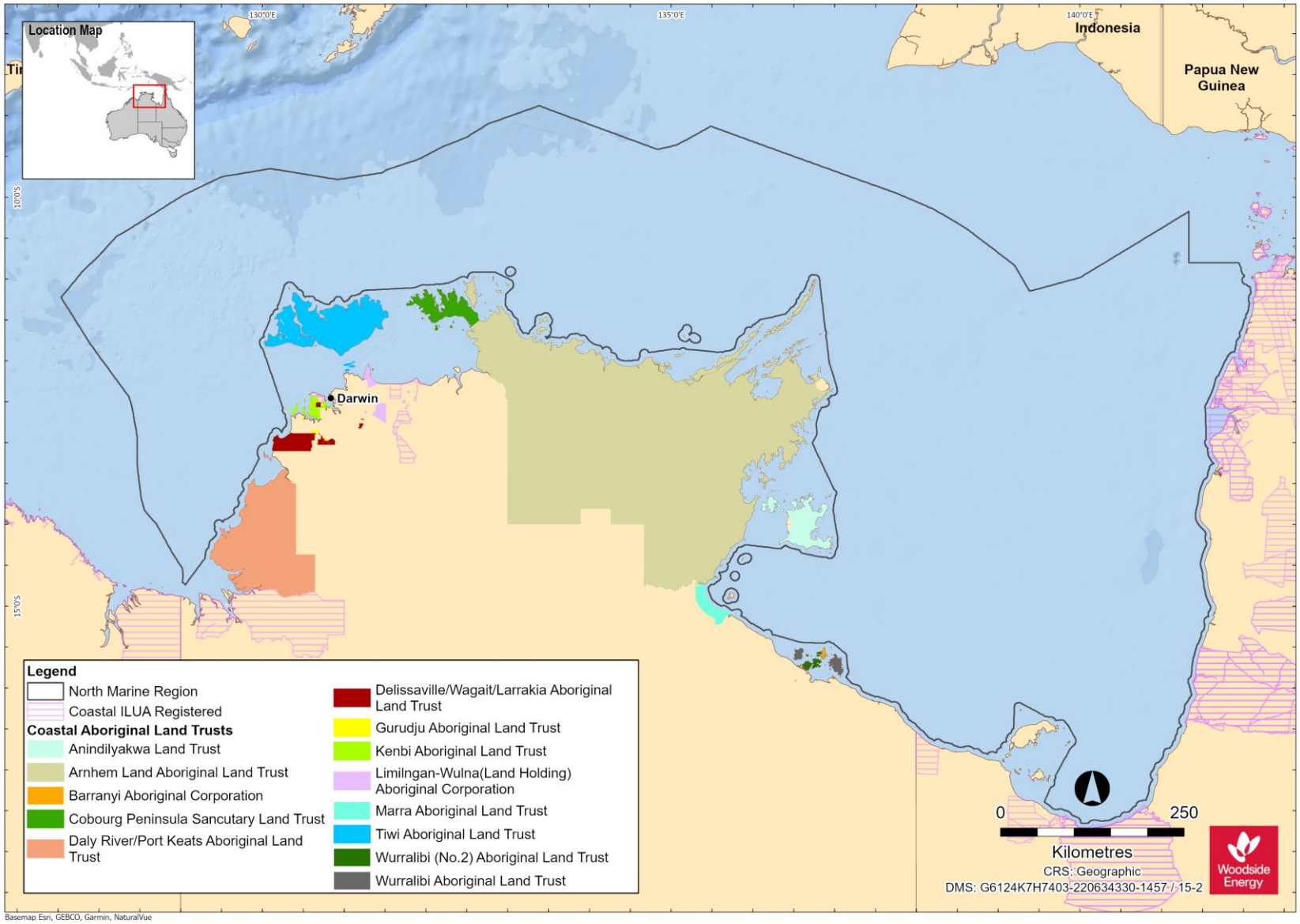


Figure 12-2 Coastal Native Title Claims/ Determinations and ILUAs in the NMR (data source: DPLH 2024)

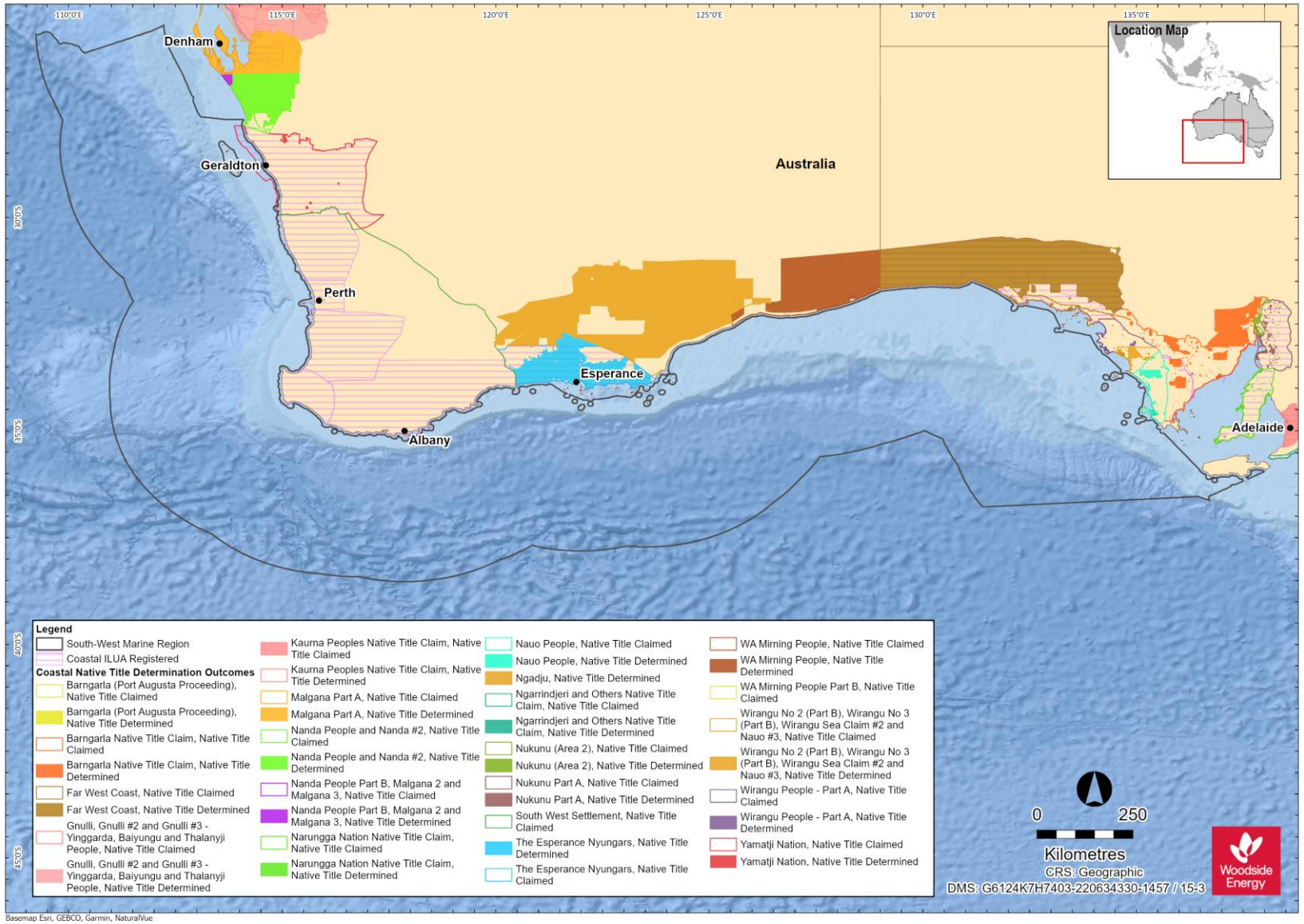


Figure 12-3 Coastal Native Title Claims/ Determinations and ILUAs in the SWMR (data source: DPLH 2024)

12.1.3 Sea Country

"Sea country is valued for Indigenous cultural identity, health and wellbeing" (DNP 2018a, 2018b).

Woodside recognises the potential for marine ecosystems to include cultural features as well as environmental values. This is one aspect of the broader concept of "Sea Country", which can be defined as the area of sea over which a First Nations group has interests, cultural value, connection and use. It has been noted that "the saltwater peoples of the north-west are associated with discrete clan estates or tribal areas, often referred to in contemporary Aboriginal English as 'Saltwater Country' or 'Sea Country'.

'Country' refers to more than just a geographical area: it is shorthand for all the values, places, resources, stories and cultural obligations associated with that geographical area." (Smyth 2007).

It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country—the seascape which Traditional Custodians view, interact with or hold knowledge of. The link between environmental protection and cultural heritage protection is illustrated in the Australian Government's Indigenous Protected Areas Program. The Indigenous Protected Areas program provides for "areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation…IPAs deliver environmental benefits…Managing IPAs also helps Indigenous communities protect the cultural values of their country for future generations…" (DCCEEW, 2024c).

McNiven (2004) suggests that "For those mainland groups whose exploitation of the sea was limited to littoral resources, it is likely that seascapes extended no more than c. 20–30km out to sea, out to the horizon and the limit of human visibility. ... However, in some coastal places, clouds that can be seen well over 100km out to sea are imbued with spiritual significance. For those groups with elaborate canoe technology, seascapes extend well over the horizon." While there is some evidence of traditional watercraft in Australia's North West, the recorded evidence is limited to travel across inland rivers (e.g. Barber and Jackson 2011) or travel between coastal islands (Paterson et al 2019).

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

Table 12-1 Commonly identified Sea Country species and habitats.

Value	Details
Marine mammals	Whales, and in particular humpback whales and dugongs, are commonly identified through consultation with First Nations people as culturally important species, with totemic importance. Common interests include maintaining their populations, biodiversity, and migration patterns.
Marine reptiles	Turtles and sea snakes are commonly identified through consultation with First Nations people as culturally important species and a favoured resource. First Nations people that identify marine reptiles as species of totemic importance or integral to songlines may place high cultural value on their protection. Cultural knowledge of turtles at a population level (turtle migration, behaviour and the related marine environment) may all be important in ensuring the continuation of cultural functions and activities that remain valuable to First Nations people (Fijn 2021:47; Delisle et al. 2018).
Fish and Cephalopods	Fish and squid are commonly identified through consultation with First Nations people as a culturally important species, with fish generally being identified as a resource. First Nations may identify cultural values associated with fish species as important to maintaining both tangible (physical cultural sites) and intangible (cultural knowledge) cultural heritage. Tangible cultural heritage associated with fish can include important cultural sites such as midden sites, fish traps and thalu sites. There are increase ceremonies/rituals for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed.

Seabirds	Seabirds, and in particular shags, are commonly identified through literature as a culturally significant species (Malgana Land and Sea Management et al. (2021), as well as a resource (seabird eggs; Smyth 2007).
Benthic habitats	First Nations groups identify benthic habitats as valuable for both their ecological and aesthetic values. Corals attract fish and seagrass providing shelters for fauna, as well as an important resource for dugongs.
Shoreline habitats	First Nations groups identify shoreline habitats as valuable for their ecological values, including mangroves for providing shelter to marine invertebrates, which are identified resources, and potential nursery for turtles. Literature also notes that mangroves are also valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002) and Smyth (2007) reports that mangrove seeds are used as a resource by Ngarda-Ngarli.

12.1.4 Marine Parks

Woodside acknowledges that Commonwealth and State Marine Park Management Plans have sought to recognise cultural values and responsibilities of First Nations groups. Australian Marine Parks (AMP) describe this framework in the following way: 'when making decisions about what can occur in marine parks and what action we will take to protect AMPs, we take values into account'. AMP summarises these values as natural values, cultural values, heritage values and socio-economic values (**Refer to section 11.5**).

12.1.5 Indigenous Protected Areas

Indigenous Protected Areas (IPAs) are areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. IPAs are an essential component of Australia's National Reserve System, which is the network of formally recognised parks, reserves and protected areas across Australia. There are currently 85 dedicated IPAs over 74 million hectares. These account for more than 50 per cent of the National Reserve System (NIAA, 2023). As of August 2024, an additional 36 Traditional Owner consultation projects to develop management plans for proposed IPAs are underway (DCCEEW, 2024c). Ten Sea Country IPA consultation projects were announced in 2022. One of these, Tukujana pa Karajarri Kura Jurrar, is in the NWMR and extends from the existing Karajarri IPA into the sea off the south-west Kimberley coast (DCCEEW, 2024c). The Indigenous Protected Areas program is administered by the National Indigenous Australians Agency in partnership with DCCEEW. Dedicated and proposed IPAs are shown in **Figure 12-12-4**.

The following IPAs are within the NWMR:

Nyangumarta Warrarn IPA

The Nyangumarta Warrarn IPA is comprised of four areas totalling approximately 28,675 km^2, including parts of The Great Sandy Desert, Walyarta Conservation Reserve, Kujungurru Warrarn Conservation Reserve Area and the Eighty Mile Beach Marine Park Intertidal Area. The traditional owners of the designated IPA self-identify as and are identified by other Pilbara First Nations people as Nyangumarta people. Nyangumarta people are the native title holders of the land and waters.

Ecological values in the IPA include a complex wetland system associated with Mandora Marsh, known to Nyangumarta people as Nyamaring. Walyarta (or Salt Creek). The Mandora Marsh area holds the most inland distribution of mangroves in Australia and the mound springs associated with Mandora Marsh area, such as Yalayala (Eil Eil), are recognised as important bird nesting sites (NWAC & YMAC, 2015).

Karajarri IPA

Karajarri Indigenous Protected Area (IPA) was dedicated in 2014, to manage, protect and enhance Karajarri country. The IPA covers nearly 25,000 km^2 of land in the southern Kimberley, including 130 km of coastline stretching from Gordon Bay to Cape Missiessy. It comprises extensive coastlines,

tidal creeks and wetlands as well as arid country that stretches into the Great Sandy Desert (NIAA, n.d.).

Karajarri people want to ensure areas of cultural and natural significance are looked after correctly according to their own protocols, and they view their environmental responsibilities as Palanapayana Tukjana Ngurra meaning “everybody looking after country properly” (KTLA, 2014a).

The IPA includes two different zoning categories to help manage country: IUCN Category 2 (National Park) and Category 6 (Protected area with sustainable use of resources). The category 2 zoning allows for the area to become part of an integrated system of protected areas with Eighty-mile beach to the south and Roebuck Bay to the north of the IPA (KTLA, 2014a).

To assist in the planning and development of the IPA, the Karajarri Traditional Lands Association (KTLA) developed a Healthy Country Plan, which provides direction for addressing threats and for working on priorities for land and cultural site management (KTLA, 2014b).

The Tukujana pa Karajarri Kura Jurrar IPA has been announced under the Sea Country IPA Program, extending from the existing Karajarri IPA into the sea off the south-west Kimberley coast (DCCEEW, 2023b). The area includes a network of coastal habitats, such as intertidal and subtidal reefs, mangrove systems, lagoons and tidal creeks, and connects the Ramsar sites of Roebuck Bay and Eighty-mile Beach (DCCEEW, 2023b).

Yawuru IPA

The Yawuru IPA was dedicated by Yawuru people in 2017, covering 2,109 km^2 of Yawuru coastal and inland country (YRNTBC, 2014). The Yawuru people are the Native Title holders of their land and sea–- their ancestors have lived along the foreshores of Roebuck Bay, across the Pindan Plains and inland along the fringes of the Great Sandy Desert for thousands of years (NIAA, n.d.-a).

The Yawuru IPA is managed under the Walyjalajala nagulagabu birrangun buru Plan of Management for 2017-2026 (YRNTBC, 2014). The plan includes eight targets for management:

- Yawuru cultural knowledge and practice,
- Yawuru significant areas,
- Yawuru rights and responsibilities,
- Niyamarri- sand dunes,
- Bilarra- wetlands,
- Birra- bush and pindan country,
- Nagulagun- saltwater country (deep water and intertidal),
- seasonal resources and biodiversity.

Cultural values include Yawuru named sites, tracks and areas, historical sites associated with pearling and pastoral industries, archaeological sites and traditional bush/ sea resources. Ecological values include reefs and seagrass beds that provide habitat for dugongs (*Dugong dugon*) and EPBC Act-listed threatened sea turtle species including Hawksbill Turtle (*Eretmochelys imbricata*), Loggerhead Turtle (*Caretta caretta*), Green Turtle (*Chelonia mydas*) and Flatback Turtle (*Nataden depressus*). Roebuck Bay is a Ramsar site and has a known population of snubfin dolphins (*Orcaella heinsohni*) (**Figure 7-6** Australian snubfin dolphin BIAs for the NWMR (data source: DCCEEW, 2024b)). Other ecological values include pearl shell beds for pearl oysters and habitat for a range of EPBC Act listed threatened species (YRNTBC, 2014).

Bardi Jawi IPA

Bardi Jawi IPA is located 160 km north of Broome and covers 1269.9 km^2 of land and sea country (NIAA, n.d.-b). The main communities on Bardi country are Djarindjin, Lombadina and Ardyaloon (One Arm Point). Bardi people live on the mainland of the Dampier Peninsula and islands immediately offshore from Ardyaloon. Jawi people call the islands further east, including Iwany (Sunday Island), their traditional country. Today people live in outstations spread along the mainland Peninsula coastline (KLC/ BJNAC RNTBC, 2013).

During the IPA consultation process, The Bardi Jawi rangers guided meetings with individual family groups to identify what they considered important to look after. An IPA steering committee was formed, who contributed cultural knowledge to the Bardi Jawi Indigenous Protected Area Management Plan (2013-2023). They were assisted by The Nature Conservancy in Conservation Action Planning (CAP). This plan highlights targets to be protected on country:

- Marnany (fringing reefs),
- aarli (fish),
- odorr (dugong) and goorlil (turtle),
- significant sites, language, law and culture,
- traditional oola (water) places,
- indigenous plant resources (KLC/ BJNAC RNTBC, 2013).

Jardagarr (coastal country) is classed under IUCN Category 4, and Niimidiman (inland country) is classed under Category 6. Niimidiman harbours many plant and animal species of high cultural value. For example, Irrgil trees are used for making boomerangs and Marrga, Joolgirr and Bilimangard trees are used for making shields. Some Niimidiman areas feature traditional Oola (water) places and stories attached to these places are culturally important. Ecological values of the Jardagarr (coastal) country includes many species of native native garrabal (birds), including Eastern Curlews and Fork-tailed Swifts (KLC/ BJNAC RNTBC, 2013).

Dambimangari IPA

Dambimangari IPA is located between Broome and Darwin, stretching east to the Prince Regent area. It covers 6,422.94 km^2 of landscape, including open grasslands, eucalyptus woodlands, intertidal flats and rocky reefs and shoals (NIAA, n.d.-c). Dambimangari is the traditional home of the Worrarra people. Dambimangari peoples' identity is interwoven with the sea and its reefs and islands. Reefs are important hunting grounds for jaya (saltwater fish) and warliny (dugong).

The targets for protection are identified in the Dambimangari Healthy Country Plan 2012-2022 as following:

- cultural sites
- reefs, beaches and islands
- saltwater fish
- turtle and dugong
- whales and dolphins
- rivers, waterholes, waterfalls and wetlands (freshwater systems)
- culturally important native animals
- bush fruits and medicine plants
- right-way fire (DAC, 2012).

Jurluwarra (Saltwater-turtle) and warliny (Dugong) are culturally important to Dambimangari people as a food source. Cultural sites include rock art sites, stone arrangements, burial sites and important camping beaches that were used for resting when travelling through saltwater country (DAC, 2012).

Uunguu IPA

Stage one of the Uunguu IPA was declared on May 23, 2011, coinciding with the Native Title Determination and release of the Healthy Country Plan. The IPA covers 7,598.06 km^2. It has been home to the Wunambal Gaambera people for many thousands of years and is part of the Wanjina Wunggurr culture. Wunambal Gaambera people call their country Uunguu – 'our living home'. Two of the reserves extend to the low water mark at Bougainville Peninsula, Vansittart Bay, Anjo Peninsula, Napier Broome Bay and islands in Rothsay Water (WGAC, 2017). A Saltwater IPA Plan of Management was created in 2017 as a sub-plan for the Wunambal Gaambera Healthy Country Plan (WGAC, 2017)[22].

[22] Marine areas were proposed to be added to the Uunguu IPA as an International Union for Conservation of Nature (IUCN) Category VI (Managed Resource) Protected Area, early in 2018.

Ten targets identified in the Wunambal Gaambera Healthy Country Plan are:

- Wanjina Wunggurr Law – our culture,
- right way fire,
- aamba (kangaroos and wallabies) and other meat foods,
- Wulo (rainforest),
- Yawal (waterholes),
- bush plants,
- rock art,
- cultural places on islands,
- fish and other seafoods,
- mangguru (marine turtles) and balguja (dugong) (WGAC, 2010).

The Uunguu Rangers look after land and sea country through pest control, visitor management, cultural heritage conservation, monitoring flora and fauna and fire management (NIAA, n.d.-c).

Balanggarra IPA

The Balanggarra IPA was dedicated on August 7, 2013. The IPA spans over 1 million hectares of land and sea country in the Kimberley region and has been home to the Balanggarra people for thousands of years. The five big rivers of the north Kimberley intersect on Balanggarra country. These rivers include the King River, Forest River, Pentecost River, Durack River and Ord River. The region also borders the Cambridge Gulf and Timor Sea. Three species of vulnerable sawfish are found in the waters of this region (Kimberley Land Council, n.d).

Nine targets identified in the Balanggarra Healthy Country Plan 2012–- 2022 are:

- Balanggarra law and culture,
- Our gra or country (land, sea, rivers, islands),
- Cultural sites (rock art sites, burial sites, heritage places),
- Native animals,
- Accessible bush tucker / medicine plants,
- Right way fire,
- Freshwater (places and freshwater fish),
- Saltwater fish and seafood,
- Migratory saltwater species (turtle, dugong, whales, dolphins).

The Balanggarra Rangers manage 1,000 km of river and sea frontage on their country to manage and protect and enhance the unique biodiversity values of their country (Balanggarra Aboriginal Corporation, 2011).

Wilinggin IPA

The Wilinggin IPA spans over 2.4 million hectares of remote country in the central north Kimberley region and was declared in 2013. It included basalt ranges and sandstone cliffs which rise 250 m high. The area has wooded grasslands, pockets of rainforest, extensive mangrove systems, tidal mudflats, rivers, creeks and billabongs. The Ngarinyin people are the traditional owners of this area and have lived on Wilinggin country for thousands of years (NIAA, n.d-d). Wilinggin Country is mostly landlocked, apart from two small saltwater areas which include Walcott Inlet and Prince Frederick Harbour.

Seven targets are identified in the Wilinggin Healthy Country Plan 2023 – 2032.

- Becoming strong on country
- Food and medicine plants
- Bushfire
- Law and culture sites
- Law and culture
- Freshwater places
- Wildlife and bush meats

The Wunggurr Rangers are caretakers of the unique natural and cultural values of Wilinggin country (Wilinggin Aboriginal Corporation, 2022).

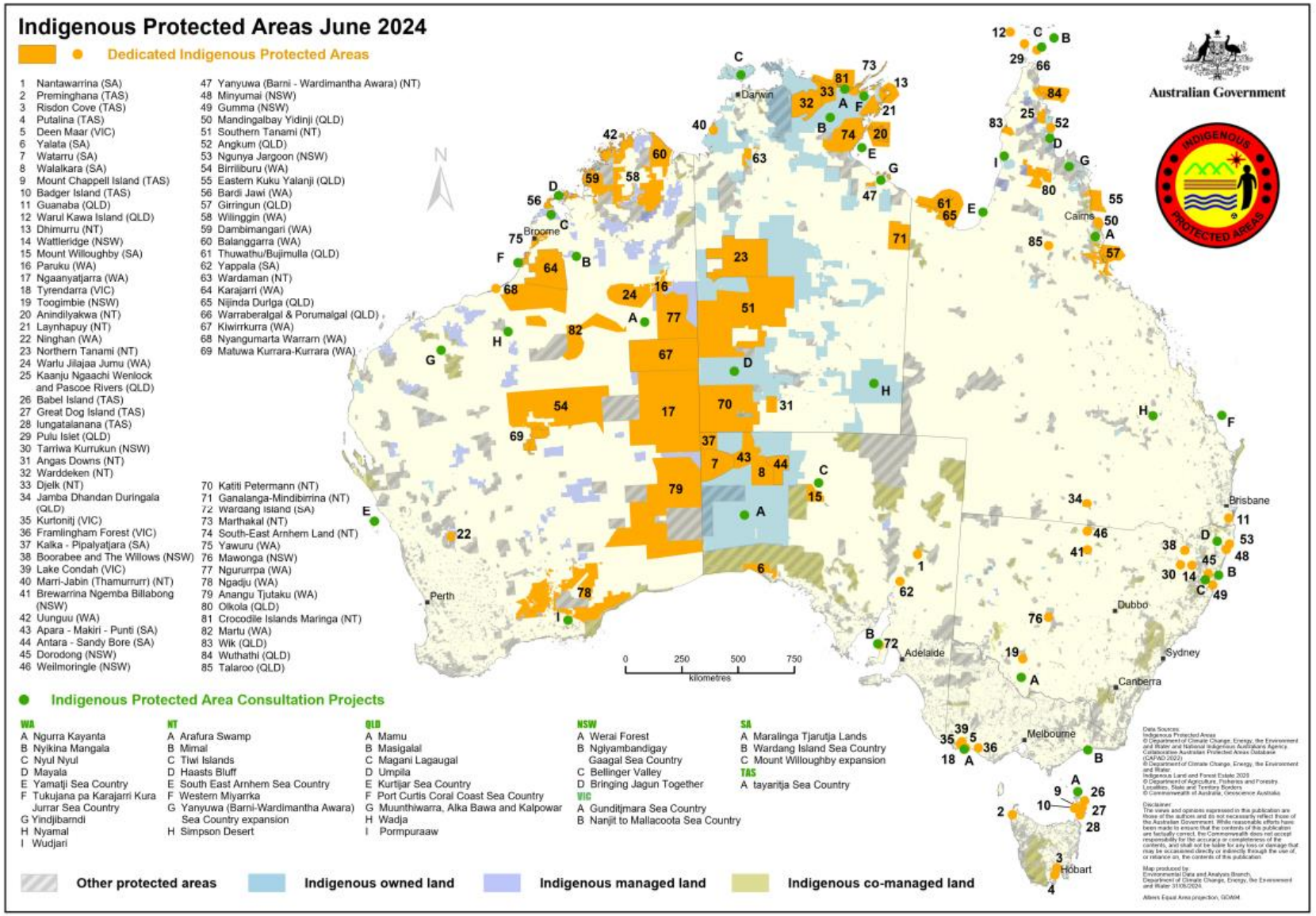


Figure 12-12-4 Indigenous Protected Areas (IPAs) in Australia (data source: DCCEEW & NIAA, 2024)

12.1.6 First Nations Cultural Heritage

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

Archaeological sites identified onshore with the potential to exist in intertidal or submerged locations include petroglyphs, fish traps and artefact scatters or burials contained within sand dunes. As archaeological sites, these features have archaeological value which relates to the preservation of their fabric (i.e. the tangible features) and their context (i.e. their location and relationship to other archaeological and natural features). Archaeological sites may also have intangible dimensions (ICOMOS, 2013) cultural value that exist in addition to their archaeological or scientific value.

Intangible values are a living expression of cultural heritage that is prevalent across generations. These values can be traditional, and they can also be new and living at the same time. An understanding of the intangible cultural heritage of different First Nations communities helps with intercultural dialogue and encourages mutual respect (UNESCO, 2011). Intangible cultural heritage is safeguarded through practicing and passing on knowledge or expressions by the people to whom it belongs to (NNTC, n.d). **Figure 12-2** provides context to common intangible themes that exist in First Nations communities.

Table 12-2 Intangible Heritage Values associated with Sea Country

Value	Details
Songlines	Oral songlines are often described by First Nations people as the law of the land and make up part of the Dreaming (Neale and Kelly 2020:30). Songlines are viewed in Western academia as a framework for relating people to land and consist of a series of invisible, interconnected routes across the landscape that mark significant sites for First Nations people (Higgins 2021:723). Songlines demonstrate First Nations peoples' strong connections to land by revealing sacred knowledge that is place-specific (Roberts 2023:5). The land's physical features are instrumental in maintaining songlines because this is how ancestral spirits journeyed through, and interacted with, the physical landscape leaving sacred knowledge behind. The interconnection between the physical and spiritual is where songlines become intrinsically tied to significant places across Country. As a result, geographical landforms are recorded within songlines and become sacred places. Such landforms can include inter alia: rocks, mountains, rivers, caves and hills (Higgins 2021:724). Songlines can become lost, fragmented or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. In Australia, songlines can stretch thousands of kilometres, making up a complex and organic network of stories containing cultural knowledge of First Nations communities across the land (Neale and Kelly 2020:35). Songlines can also extend out to Sea Country and contain cultural knowledge that is tied to geographic features, atmospheric phenomena and marine plants and animals. Often songlines containing references to a seascape or Sea Country make mention of mythical events occurring around marine life, fishing areas, submerged rocks or coral. Songlines that embody seascapes can reflect how a group may relate to, or value, Sea Country—for example connections to nearby islands that they once inhabited in their songlines (Smyth and Isherwood 2016:307). Songlines can also be used as proof of long-standing connection to land and support a legal entitlement to land rights (Higgins 2021:74). Examples where songlines contain strong references to Sea Country are more common in Pacific Islander and Torres Strait Islander communities, who often refer to seascapes and skylines in their songlines in order to communicate sacred knowledge that assists in safe navigation of the ocean (Neale and Kelly 2020:83-84).
Creation/dreaming sites, sacred sites and ancestral beings	The only published sources located by Woodside with detailed descriptions of the location of ancestral beings or creation/dreaming/sacred sites place these on land, or within inland water sources such as rivers or pools. However, some ancestral beings are noted to live within or originate from the sea generally, and some creation stories talk to the creation of features from

	or in the sea. Additionally, every place on shore or at sea must be assumed to have been created on some level in First Nations cosmology.
Cultural obligations to care for Country	Caring for Country collectively refers to the cultural obligations of individuals and groups, as well as rituals and ceremonies required for the physical and spiritual health of the environment. In the literature reviewed by Woodside, caring for Country was noted to include, but is not limited to, maintenance of the physical environment and ecosystem. It may also have cultural, spiritual and ritual dimensions such as caring for ancestral beings or ensuring cultural safety. Thalu are places where what are known as “increase ceremonies” are performed to enhance or maintain populations of plants, animals or phenomena. All mentions of active ceremonial sites were confined to onshore locations, though the values may extend offshore where e.g., a thalu relates to marine species populations.
Knowledge of Country/customary law and transfer of knowledge	Knowledge of and familiarity with the features of Sea Country is itself a value. The inherent potential for restricted or secret knowledge makes this difficult to assess even through consultation with Traditional Custodians. However, aspects such as limitations on access to sites or disruption/relocation of First Nations communities may have implications for the preservation of First Nations knowledge. Further, connection to Country may be damaged where people are displaced or disrupted (e.g., during colonisation) or where there is a loss of technical skills or environmental knowledge (McDonald and Phillips, 2021). Transfer of knowledge includes continuing traditional practices to pass on practical skills. This transfer of knowledge may be integral to managing a group’s intangible cultural heritage (UNESCO 2003).
Connection to Country	Describes the multi-faceted relationship between First Nations people and the landscape, which is envisioned as having personhood and spirit. It is also an aspect of personal identity for many First Nations people. In the case of Sea Country this can mean identifying as a Saltwater person, where “essence of being a 'Saltwater' person is ontological… it is about how people relate spiritually to the sea and engage with spiritual forces that created it, the marine flora and fauna and people” (McDonald and Phillips, 2021).
Access to Country, including Sea Country	Access is necessary for the continuation of other values including caring for Country, carrying out cultural practices and the transfer of traditional knowledge. Being on Country can be an important way of expressing or maintaining connection to Country (Australian Indigenous HealthInfoNet n.d.). Access is also a value in its own right, as a continuation of traditional Sea Country access and use.
Kinship systems and totemic species	Individuals may have kinship to specific species (Smyth 2008, Juluwarlu 2004) and/or a responsibility to care for species (Muller 2008). Kinship arises from totemic associations within First Nations “skin group” systems. It is forbidden for an individual to kill or eat a species who is from the same “skin group” (Juluwarlu 2004). They may also have certain obligations linked to the discussion of caring for Country above. It is assumed that marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood that these relationships do not prohibit people outside of that “skin group” from hunting or eating that same species (Juluwarlu 2004).
Resource collection	A number of marine species are identified through consultation and literature as important resources, particularly as food sources **(See Section 12.1.4)**. In addition to their immediate value as sustenance, the gathering and preparation of these resources is informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations.

On 15 November 2023, the *Aboriginal Heritage Act 1972* (WA) was restored as the legislation that manages Aboriginal heritage in Western Australia (DPLH, 2024). Under section 17 of that Act it is an offence to excavate, destroy, damage, conceal or alter any Aboriginal site without authorisation. Where there is a risk of injury or desecration to a significant Aboriginal area, even where permitted under the AHA, any Aboriginal person may apply to the federal Environment Minister for a declaration under sections 9 or 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* for the protection and preservation of that area.

12.1.6.1 Submerged Cultural Heritage

It is understood that the sea level has risen significantly during the 65,000 years of Indigenous occupation, and areas that were once inhabited are now submerged on the continental shelf (Veth

et al 2019; UWA 2021). At its lowest level during Indigenous occupation, the sea level was between 125 m (O'Leary et al 2020, Veth et al 2019, Williams et al 2018) and 130 m below current levels (Benjamin et al 2020, Benjamin et al 2023, UWA 2021).

Archaeological material preserved on the Ancient Landscape has the potential to provide further information about the earliest periods of human occupation (Veth et al 2019; UWA 2021).

Recent archaeological discoveries demonstrate that the now submerged landscape was occupied and inhabited, and can retain archaeological material from this time (Benjamin et al, 2020, Benjamin et al 2023; see Ward et al 2022 for an opposing view).

Certain landscapes have been identified as archaeologically prospective on the submerged Ancient Landscape, including:

- submerged water sources (rivers, waterholes, tidal channels and seeps) which have an increased likelihood of use or habitation as past generations used the associated resources (UWA 2021);
- submerged calcarenite ridges younger than human occupation of the continent which may have formed over and protected artefacts in-situ (Veth 2019);
- prominent landscape features (e.g. hills, particularly of igneous rock formations) that may have been foci for cultural activity (UWA 2021);
- karst depressions and other "catch points" where artefacts may accumulate following disturbances caused by inundation (UWA 2021, Nutley 2022, Nutley 2023a);
- Madeleine Shoals has been specifically identified by Murujuga Aboriginal Corporation (MAC) as an archaeologically prospective featuredue to its igneous rock formations which have the potential to contain petroglyphs.

The sites considered most likely to survive inundation, based on the review of existing literature, were logically the more robust forms including:

- midden and artefacts within cemented dunes, relict water holes, and beach rock deposits;
- quarry outcrops, extraction pits, and associated reduction debris in fine-grained volcanic outcrops;
- curvilinear stone structures and standing stones sitting on volcanic pavements and jammed into volcanic rock piles;
- lag deposits of artefacts and possibly midden on hardpan in suitable landscape contexts with good preservation conditions (e.g. shallow declination shorelines in sheltered passages of the inner archipelago or on the leeward side of hard-rock/fringing reef cause-ways adjacent to the outer islands);
- small overhangs and shelters with preserved deposits, facing away from the dominant wave and wind action. (Veth et al., 2019).

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

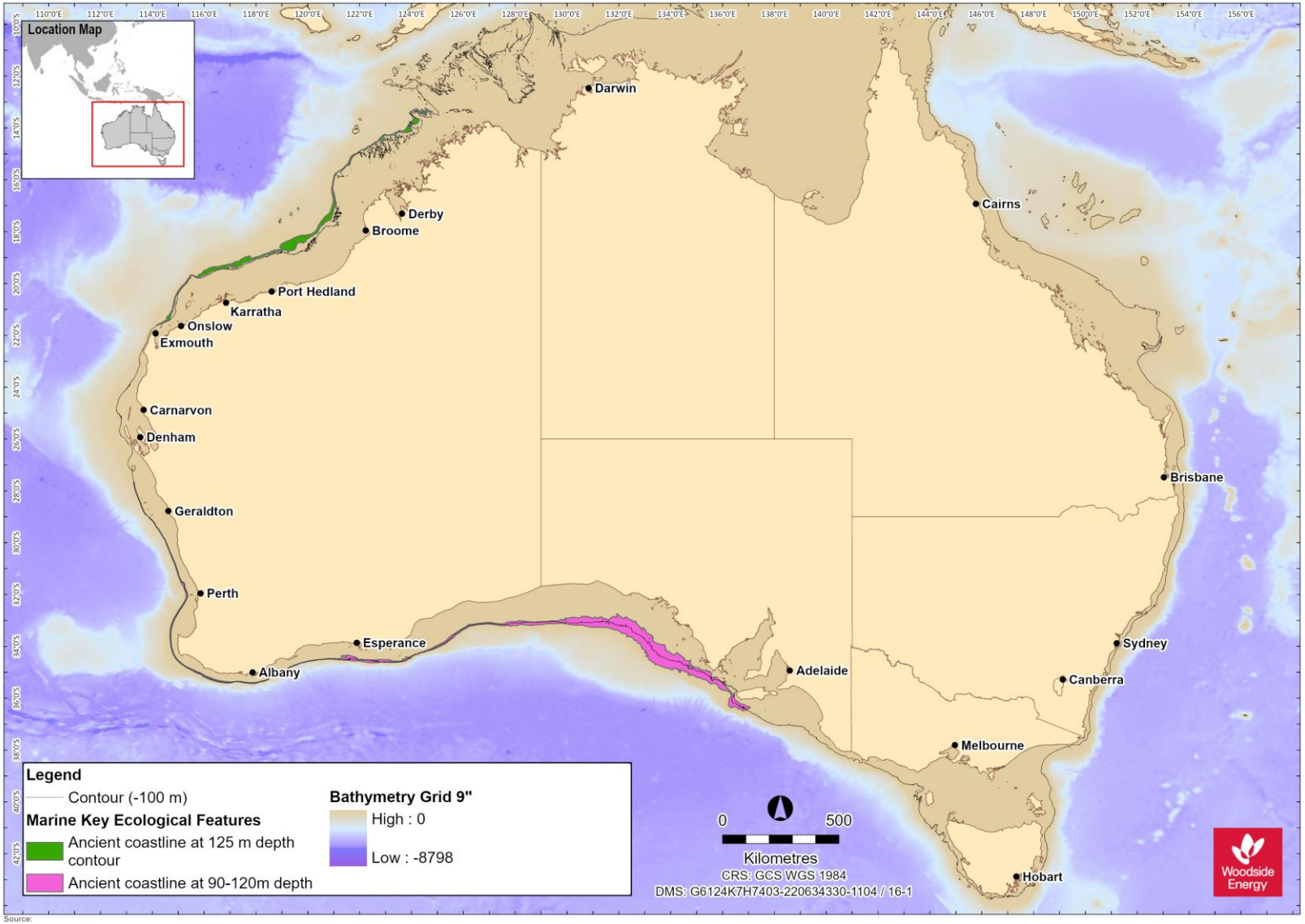


Figure 12-5 Indicative Bathymetry of the Ancient Submerged Landscape (data source: GA 2024, DCCEEW, 2024d)

12.1.6.2 First Nations Sites of Significance

Murujuga (the Burrup Peninsula) has a very high density of significant Indigenous heritage sites and places with tangible and intangible heritage values. The area has one of the largest, densest, and most diverse collections of rock art in the world. It is estimated that the peninsula and surrounding islands contain over a million petroglyphs (rock engravings) covering a broad range of styles and subjects. The landscape also contains quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, grinding patches and stone arrangements that evidence tens of thousands of years of human occupation. These places are linked to First Nations cosmology, Dreaming stories and songs through the stories, knowledge and customs that are still held by traditional custodians.

In 2007 the Dampier Archipelago (including the Burrup Peninsula) was included on the National Heritage List due to outstanding heritage values relating to Australia's cultural history contained in the large number, density, diversity, distribution and fine execution of rock art. Within the National Heritage Place, the Murujuga National Park covers 4,913 ha and is co-managed by the Murujuga Aboriginal Corporation and the Department of Biodiversity, Conservation and Attractions. The Murujuga Cultural Landscape was also added to Australia's Tentative World Heritage List in 2020, with full World Heritage Listing anticipated in 2024.

The Department of Planning, Lands and Heritage maintains a register of registered sites and heritage places. There are over 1,600 registered sites on Murujuga and the Dampier Archipelago with around 1,100 other heritage places. This register is not comprehensive and will be complemented by heritage surveys where necessary. Protection of National and World Heritage values is also legislated through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Murujuga National Park is managed under the *Conservation and Land Management Act 1984* (WA).

12.1.7 Historic Sites of Significance

Places of historic cultural significance are protected under Commonwealth, State and local regimes. Places inscribed on the National or World Heritage list are protected through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Historic places may also be protected under the *Heritage Act 2018* (WA); under section 129 of this Act the prohibited alteration, demolition, damage, despoilment or removal of objects from a registered place may result in a fine of A$1 million. Protection of heritage by local government typically emanates from local planning schemes produced under Part 5 of the *Planning and Development Act 2005* (WA).

Historical sites of significance and heritage value are found along adjacent foreshores of the SWMR, NWMR and NWR.

12.1.8 Historic Underwater Heritage

The remains of vessels and aircraft in Commonwealth waters, along with any associated article, are automatically protected under the *Underwater Cultural Heritage Act 2018* (Cth) after 75 years. This is applicable whether the existence or location of the article is known or unknown, as per section 16 of the Act. Other articles of underwater cultural heritage may be declared for protection as outlined in section 17 of the Act. Remains and relics of any ship lost, wrecked or abandoned in Western Australian waters before 1900 are protected by the *Maritime Archaeology Act 1973* (WA).

There are no known National Heritage listed shipwrecks in the NWMR and NMR (**Table 12-3** and **Table 12-4)**. The only known National heritage listed shipwrecks are within the SWMR and include:

- The HMAS Sydney II
- The HSK Kormoran
- The Batavia

Information on National Heritage listed shipwrecks in the SWMR can be found in **Table 12-5**.

Known historical shipwreck sites in Western Australian waters are listed in the WA Maritime Museum Shipwreck Database. Known historical shipwreck sites in Commonwealth waters are listed in Australasian Underwater Cultural Heritage Database. These databases only cover known historical sites. Known shipwrecks listed in these databases for the NWMR, NMR and SWMR are shown in **Figure 12-6**, **Figure 12-7**, and **Figure 12-8** respectively.

12.1.9 World, National and Commonwealth Listed Heritage Places

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects the heritage values of National Heritage Listed and World Heritage Listed places. Any action that will have or is likely to have a significant impact on the heritage values of these places are offences under Part 3, Division 1 of the EPBC Act unless the action is permitted under one of the mechanisms of the EPBC Act. These mechanisms include a number of exceptions set out in Part 4, approvals granted under Part 9 and ministerial decisions under Division 2 Part 7.

Australia's National Heritage Sites are those of outstanding natural, historic and/or Indigenous significance to Australia. Indigenous Protected Areas and National Heritage places classed as natural are discussed in **Section 11.3**. Historic and/or Indigenous National Heritage Listed Places of the NWMR and SWMR include:

- Dampier Archipelago (including Burrup Peninsula)
- Dirk Hartog Landing Site/Cape Inscription
- *HMAS Sydney II*, *HSK Kormoran* Shipwreck Sites
- *Batavia* Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos
- Cheetup Rock Shelter

Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values, which are owned or controlled by the Australian Government. A number of these sites are owned or controlled by the Department of Defence, as well as Government agencies relating to maritime safety, customs and communication. Commonwealth Heritage places classed as natural are discussed in **Section 11.3**. Listed Heritage Places in the NWMR are all natural with two related to defence activities which include:

- Yampi Defence Area (**Table 11-6**)
- Learmonth Air Weapons Range Facility (**Table 11-6**)

World Heritage Properties are those sites that hold universal value which transcends any value that may be held by any one nation. These sites and their qualities are detailed in the Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), to which Australia is a founding member. The Protected Matters Search Report (**APPENDIX A**. Protected Matter Search Reports for NWMR, SWMR and NMR) lists two natural World Heritage Properties in the NWMR (refer **Section 11.2**). There are no cultural heritage listings located within the NWMR.

Summary tables of heritage places for NWMR, SWMR and NMR are presented in **Table 12-3,Table 12-4**and **Table 12-5.**

Table 12-3 Heritage Places (Indigenous and Historic) within the NWMR

Heritage Places	Woodside Activity Area			Class	Description	Conservation Values
	Browse	NWS/S	NW Cape			
National Heritage Properties						
Dampier Archipelago (including Burrup Peninsula)	-	✓	-	Indigenous	The Dampier Archipelago (including the Burrup Peninsula) contains one of the densest concentrations of rock engravings in Australia with some sites containing thousands or tens of thousands of images.	The rock engravings comprise images of avian, marine and terrestrial fauna, schematised human figures, figures with mixed human and animal characteristics and geometric designs. At a national level it has an exceptionally diverse and dynamic range of schematised human figures some of which are arranged in complex scenes. The fine execution and dynamic nature of the engravings, particularly some of the composite panels, exhibit a degree of creativity that is unusual in Australian rock engravings.
Dirk Hartog Landing Site 1616 – Cape Inscription Area	-	-	✓	Historic	Cape Inscription is the site of the oldest known landings of Europeans on the WA coastline.	The Cape Inscription area displays uncommon aspects of Australia's cultural history because of the cumulative effect its association with these explorers and surveyors had on growing knowledge of the great southern continent in Europe. The association of the site with these early navigators stimulated the development of the European view of the great southern continent at a time when they began to look at the world with a modern scientific outlook.
Commonwealth Heritage Properties						
None						

Table 12-4 Heritage Places (Indigenous and Historic) within the NMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
None			
Commonwealth Heritage Properties			
None			

Table 12-5 Heritage Places (Indigenous and Historic) within the SWMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
Cheetup Rock Shelter	Indigenous	Cheetup, meaning "place of the birds", is the name of a spacious rock shelter located in Cape Le Grand National Park, about 55 km east of Esperance in WA. First Nations people associated with the place identify themselves as Nyungar/Noongar, Ngadju (shortened from Ngadjunmaia) or Mirning.	Cheetup rock shelter provides outstanding evidence for the antiquity of processing and use of cycad seeds by First Nations people. The seeds of the cycad are extremely toxic and can cause speedy death if eaten fresh without proper preparation to remove the toxins. The presence of *Macrozamia riedlei* seeds in a pit lined with Xanthorrhoea (grass tree) leaf bases indicates that First Nations people in the Esperance region had the knowledge to remove the toxins of this important source of carbohydrate and protein at least 13,200 years ago.
Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos	Historic	The Batavia and its associated sites hold an important place in the discovery and delineation of the WA coastline. The wreck of the Batavia, and other Dutch ships like her, convinced the VOC (Dutch East India Company) of the necessity of more accurate charts of the coastline and resulted in the commissioning of Vlamingh's 1696 voyage.	Because of its relatively undisturbed nature the archaeological investigation of the wreck itself has revealed a range of objects of considerable value as well as to artefact specialists and historians.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	The naval battle fought between the Australian warship HMAS Sydney II and the German commerce raider HSK Kormoran off the WA coast during World War II was a defining event in Australia's cultural history. HMAS Sydney II was Australia's most famous warship of the time and this battle has forever linked the stories of these warships to each other. The loss of HMAS Sydney II along with its entire crew of 645 following the battle with HSK Kormoran, remains as Australia's worst naval disaster.	The shipwreck sites of HMAS Sydney II and HSK Kormoran have outstanding heritage value to the nation because of their importance in a defining event in Australia's cultural history and for their part in development of the process of the defence of Australia.

Heritage Places	Class	Description	Conservation Values
Commonwealth Heritage Properties			
Cliff Point Historic Sites	Historic	Cliff Head is a limestone bluff on the east coast of Garden Island. Evidence of occupation has been reported from the beach just north of the head, the immediate hinterland, the ridge above and on the south face of the ridge.	The Cliff Point Historic Site, individually significant within the area of Garden Island, is important as the first site inhabited by Governor Stirling's party in 1829 when founding the colony of WA, and as WA's first official non-convict settlement. The site was occupied in the first instance by Captain Charles Fremantle before the arrival of Captain Stirling. The party occupied the site for two months before a move was made to the Swan River settlement on the mainland.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	As above.	As above.
J Gun Battery	Historic	J Battery comprised two 155 mm long range guns, the other similar battery being at Cape Peron on the mainland at the entrance to Cockburn Sound. Located in the dune systems at the north western corner of Garden Island, elements of the J Battery complex are now covered in part by sand.	J Gun Battery (1942) is individually significant within the area of Garden Island (Register No. 019544) and is historically important as the first gun battery constructed on Garden Island and as one of two long range gun batteries which played a strategic role in the coastal defences of Cockburn Sound and Fremantle following the entry of Japan into the Second World War (1939-45).

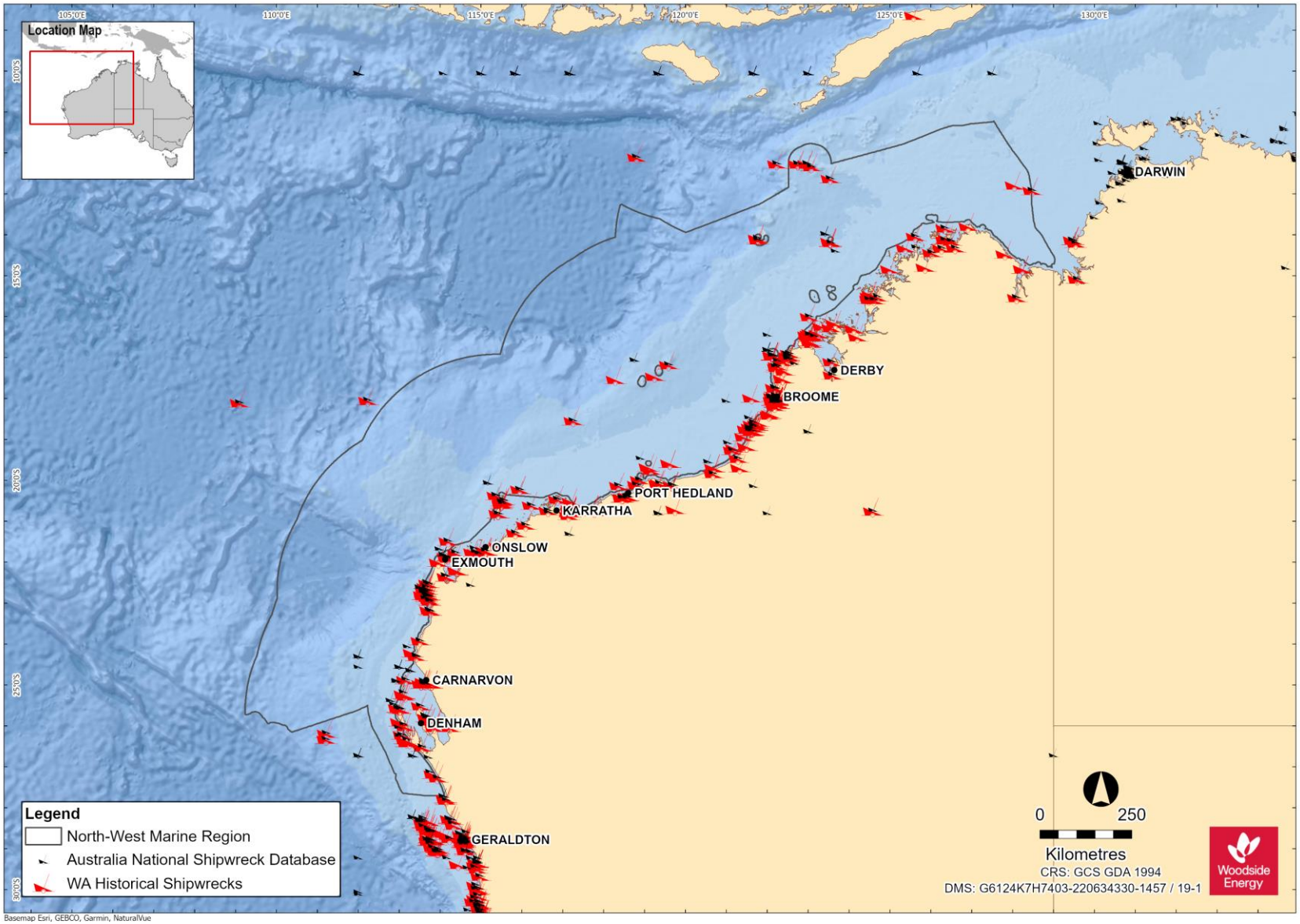


Figure 12-6 Shipwrecks in the NWMR (data source: WAM, 2018 and AODN, 2008)

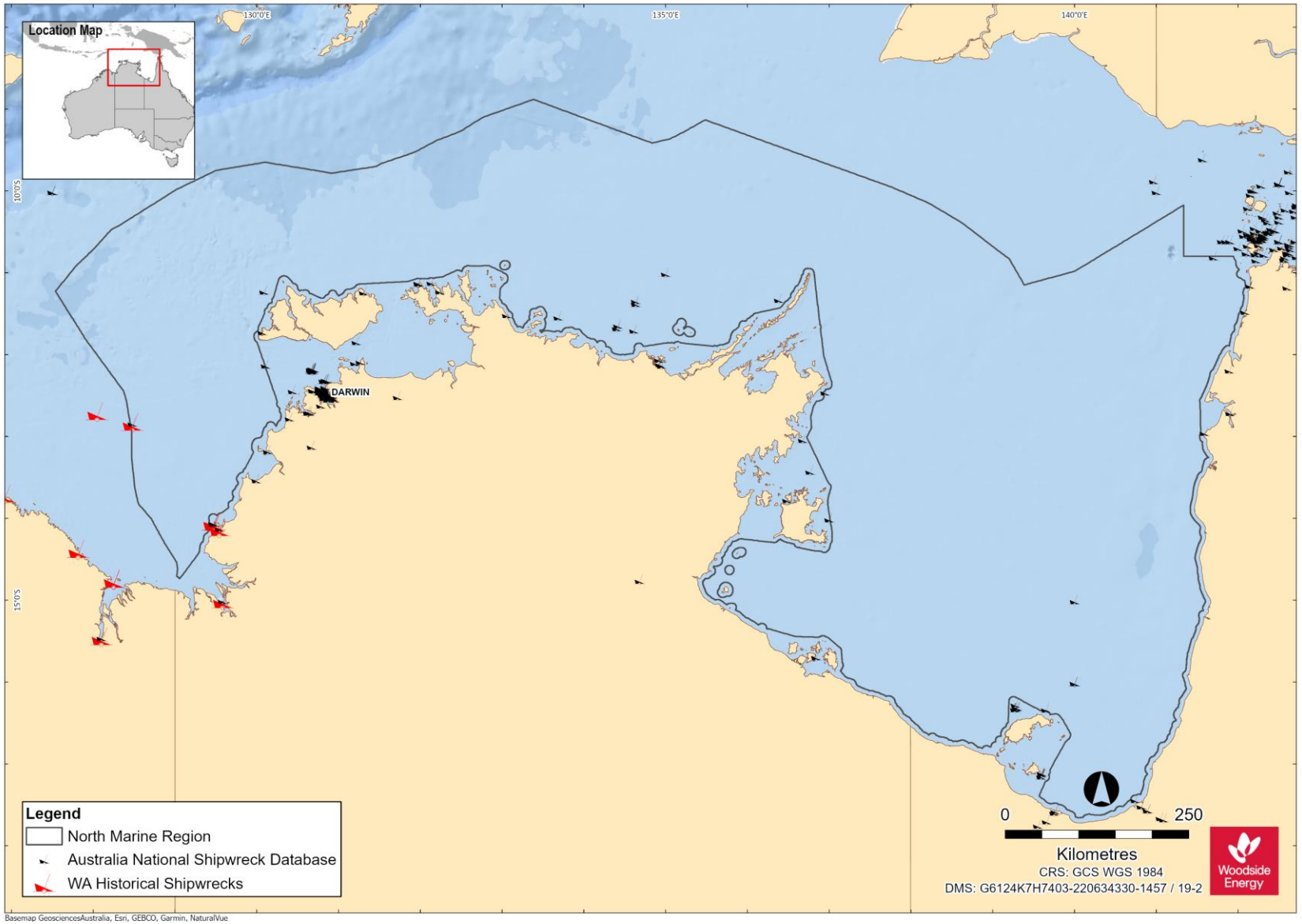


Figure 12-7 Shipwrecks in the NMR (data source: WAM, 2018 and AODN, 2008)

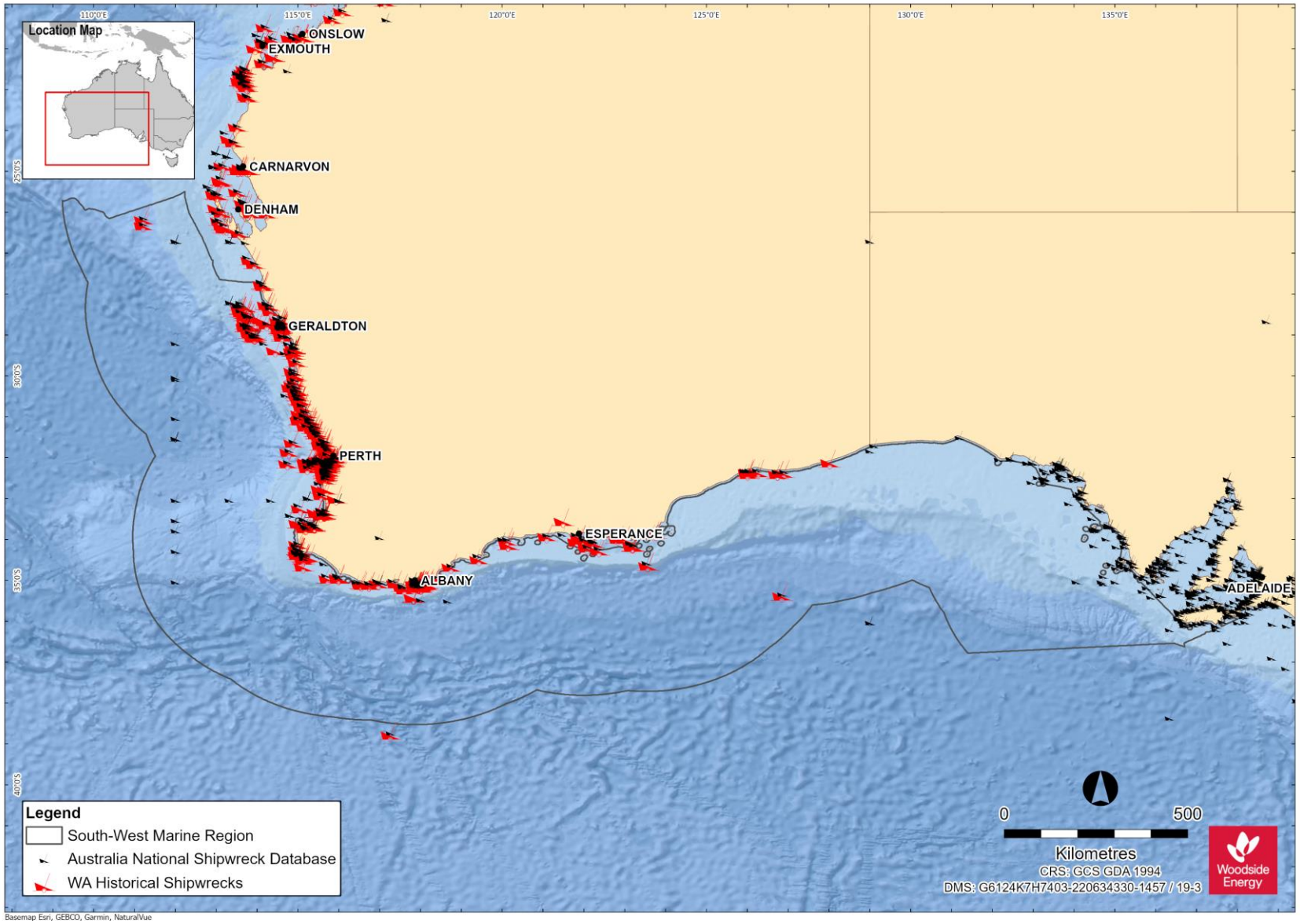


Figure 12-8 Shipwrecks in the SWMR (data source: WAM, 2018 and AODN, 2008)

12.2 Socio-Economic Values

Socio-economic values include commercial and traditional fishing, tourism and recreation, shipping, oil and gas activities and defence activities.

12.2.1 Commercial Fisheries Commonwealth and State

The Australian Fisheries Management Authority (AFMA) manages fisheries on behalf of the Commonwealth Government and is bound by objectives under the *Fisheries Management Act 1991* (Cth).

WA State commercial fisheries are managed by the WA Department of Primary Industries and Regional Development (WA DPIRD) under the *Fish Resources Management Act 1994* (WA), *Fisheries Resources Management Regulations 1995* (WA), relevant gazetted notices and licence conditions, and applicable Fishery Management Plans.

Commonwealth and State managed fisheries that are licensed to operate within the NWMR are summarised in **Table 12-6**.

Table 12-6 Commonwealth and State managed fisheries

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Commonwealth Managed Fisheries							
Southern Bluefin Tuna Fishery	✓	✓	✓	**Management area**	The Southern Bluefin Tuna Fishery covers the entire EEZ around Australia, out to 200 nm from the coast. They do not fish in the Woodside activity area.		
				Species targeted	**Fishing methods**	**Fishing depth**	
				Southern bluefin tuna (*Thunnus maccoyii*)	Longline, purse seine fishing, and minor line (troll and poling).	Southern bluefin tuna is a pelagic species which can be found to depths of 500 m (AFMA, 2021a).	
				Fishing effort	Most of the Australian fishing effort is by purse-seine vessels in the Great Australian Bight and waters off South Australia during summer months, and by longline off the New South Wales coastline during winter months (Patterson and Dylewski, 2023a). The Southern Bluefin Tuna Fishery is shared amongst countries. Australia currently has a 35% share of the total global allowable catch. Whilst wild capture fishing in Australia to sell directly to market can occur anywhere throughout the fisheries range, currently most of that quota is value-added through ranching (on-growing the wild captured fish for an extra 5-6 months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed/sardines (40,000+ tonnes). North-west WA is critically important regardless of how the quota is fished because of the proximity to the single spawning ground of this global roaming species. Young fish (1–4 years of age) move from the spawning ground in the north-east Indian Ocean into the Australian EEZ and southwards along the Western Australian coast (Patterson and Dylewski, 2023). The stock is classified as not overfished (Patterson and Dylewski. 2023a). A total of 5,972 t bluefin tuna catch was recorded for the 2021-22 fishing season, an increase from 5,646 t in the 2020-21 period (Patterson and Dylewski, 2023a). Of the total catch, 4,957 t were collected using purse seine and 1,015 from pelagic longline.	
				Active licences/vessels	Eight purse seine vessels and 22 longline vessels, an increase from 7 purse seine vessels and 20 longline vessels in the 2020-21 period (Patterson and Dylewski, 2023a).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Western Skipjack Tuna Fishery	✓	✓	✓	**Management area**	The combined western and eastern skipjack tuna (*Katsuwonus pelamis*) fisheries encompass the entire Australian EEZ. The Western Skipjack Tuna Fishery extends westward from the SA/ Victorian border across the Great Australian Bight and around the west coast of WA to the Cape York Peninsula.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western skipjack tuna (*Katsuwonus pelamis*)		Fishers use purse seine gear (about 98% of catch) and sometimes pole and line when fishing for skipjack tuna.	Western skipjack tuna is a pelagic species that can be found to depths of 260 m (AFMA, 2021b).
				Fishing effort:	The Skipjack Tuna Fishery has not been actively fished since the 2008-2009 fishing season (Patterson and Delewski, 2023b). The management arrangements for this fishery will be reviewed if active boats re-enter the fishery.		
				Active licences/vessels:	No active vessels operating since 2009 (Patterson and Delewski, 2023b).		
Western Tuna and Billfish Fishery	✓	✓	✓	**Management area**	The Western Tuna and Billfish Fishery extends to the Australian EEZ boundary in the Indian Ocean.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Key species caught in the fishery are bigeye tuna (*Thunnus obesus*), yellowfin tuna (*T. albacares*) and swordfish (*Xiphias gladius*). Striped marlin (*Kajikia audax*) is a minor component of the catch. Catch of albacore (*T. alalunga*), a non-quota species, can approach levels similar to yellowfin tuna catch in some years (Blake et al., 2022a).		Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used, and purse seine.	Species have a broad depth distribution, with tuna occurring at 150 – 300 m, striped marlin at 150 m and swordfish at up to 600 m (BRS, 2007).
				Fishing effort:	The fishery operates in Australia's EEZ and high seas of the Indian Ocean. Fishing effort in recent years has been concentrated off south-west WA, with occasional activity off SA (Patterson et al., 2023).		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">A total of 145 t catch was landed in the 2021-22 seasons, a decrease from 252 t in the 2020-21 period (Patterson, et al., 2023).
The striped marlin, bigeye tuna, and yellowfin tuna are classified as subject to overfishing (Patterson et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">Two pelagic longline and 3 minor line vessels were active during the 2021-22 season (Patterson, et al., 2023).</td></tr>
<tr><td>Western Deepwater Trawl Fishery</td><td></td><td></td><td>✓</td><td>Management area</td><td colspan="3">The Western Deepwater Trawl Fishery is in deep water off WA, from the line approximating the 200 m isobath to the edge of the Australian Fishing Zone (AFZ). (Blake et.al. 2021).</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">More than 50 species, historically dominated by six commercial finfish species or species groups:
Orange roughy (Hoplostethus atlanticus)
Oreos (Oreosomatidae)
Boarfish (Pentacerotidae)
Eteline snapper (Lutjanidae: Etelinae)
Apsiline snapper (Lutjanidae: Apsilinae)
Sea bream (Lethrinidae).</td><td>Demersal trawl.</td><td>Water deeper than 200 m. (Blake et.al. 2021).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">The number of vessels active in the fishery and total hours trawled have fluctuated from year to year. Notably, total hours trawled were relatively high for a brief period during the early 2000s when fishers targeted ruby snapper and deep-water bugs (Patterson et al., 2020).
Total trawl hours have been variable but relatively low since 2005-06. In 2021-22, 76 trawl-hours were recorded in the fishery, down from a recent peak of 1,108 in 2017-18 (Keller et al., 2023)</td></tr>
</table>

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">The total catch was 12 t in the 2021-22 season, up from 5 t in the 2020-21 season and no deepwater bugs were caught between 2020 and 2022 (Keller et al., 2023). Ruby snapper made up 40% of the catch in 2021-22 and 31% in 2020-21 (Keller et al., 2023).
Ruby snapper and deepwater bugs stock are considered not subject to overfishing but the biomass status of deepwater bugs are classified as uncertain (Keller, et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">Since 2004-05, 1-3 vessels have been active in the fishery, with 2 active vessels in 2021-22 (Keller, et al., 2023).</td></tr>
<tr><td>North-west Slope Trawl Fishery</td><td>✓</td><td>✓</td><td></td><td>Management area</td><td colspan="3">The North-west Slope Trawl Fishery extends from 114 °E to 125 °E, from the 200 m isobath to the outer limit of the AFZ (200 nm from the coastline, which is the boundary of the Australian EEZ).</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Australian scampi (Metanephrops australiensis) and smaller quantities of velvet and Boschma’s scampi (M. velutinus and M. boschmai). A quantity of prawns is harvested each season, and squids are becoming an increasingly significant component of the catch.
Mixed snappers (Lutjanidae) and redspot emperor (Lethrinus lentjan) have historically been an important component of the catch Blake et al., 2021).</td><td>Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson et al., 2017).</td><td>Typically depths of 350 to 600 m (Patterson et al., 2017)</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">The North-west Slope Trawl Fishery commenced in 1985 and the number of active vessels peaked at 21 in the 1986-1987 season, decreasing to between 1 and 6 vessels per year since 2005-06 (Keller and Curtotti, 2023).
A total catch of 85.8 t was recorded in 2021-22, a decrease from 87.05 t in 2020-21 (Keller and Curtotti, 2023). Of the total catch, the Australian scampi species comprised of approximately 33% (29 t), down from 50% (44 t) in 2020-21.
The stock assessment of scampi in the fishery are classified as not subject to overfishing (Keller and Curtotti, 2023).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	Three vessels were active in the 2021-22 season, decline from 4 in the 2021-22 season, and trawl-hours decreased from 4,420 in 2020-21 to 3,950 in 2021-22 (Keller and Curtottie, 2023).		
State Managed Fisheries							
Pilbara Fish Trawl (Interim) Managed Fishery		✓		**Management area**	The Pilbara Trawl (Interim) Managed Fishery is a high intensity fishery divided into two zones and an area governed by Schedule 5 (prohibited to trawling). In addition to the Prohibited Trawl Fishing area, no fish trawl units are allocated for use in Zone 1 or Areas 3 and 6 of Zone 2 (which comprises six management areas) (Newman et al., 2021a).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The fishery targets more than 50 scalefish species. The main demersal scalefish species landed by the fisheries in the Pilbara region are bluespotted emperor, red emperor and rankin cod (Newman et al., 2021a). The key species caught by the Pilbara Trawl (Interim) Managed Fishery include crimson snapper, bluespotted emperor trevally and threadfin bream (DPIRD, 2020).		Demersal trawl. The fishery operates with standard stern trawling gear (single net with extension sweeps) (Newman et al., 2021a).	The fishery operates in waters between 50 and 200 m water depth (Allen et al., 2014, Newman et al. 2015).
				Fishing effort:	Based on State of the Fisheries annual reports provided by DPIRD, catch trends were seen to be increasing over the past reporting years, until the past two seasons: The Pilbara Trawl (Interim) Managed Fishery catch was 1784 t in 2022,1928 t in 2021, 2087 t in 2020, 2142 t in 2019, 1996 t in 2018, 1780 t in 2017, 1529 t in 2016, 1172 t in 2015 and 1105 t in 2014. (Wakefield et al., 2023a) The fishery landed 72% of total commercial catches of the demersal scale fish in the Pilbara in 2022. Increasing catch rates and fishing mortality spawning biomass estimates indicate that imposed effort reductions since 2008 have resulted in increased fish abundance and stock rebuilding in the fishery (Wakefield et al., 2023a). In 2021, the total catch of the indicator species red emperor in the Pilbara Demersal Scalefish Fisheries (includes trawl, trap and line sectors) was 192 t, which is within the acceptable catch range (Wakefield et al., 2023).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					The biological stocks for the Pilbara Demersal Scalefish Fisheries are classified as sustainable-adequate (Wakefield et al., 2023a).		
				Active licences/vessels:	Four active vessels in the trawl sector in 2022 (Wakefield et al., 2023a).		
Pilbara Trap Managed Fishery		✓	✓	**Management area**	The Pilbara Trap Managed Fishery covers the area from Exmouth northwards and eastwards to the 120° line of longitude, and offshore as far as the 200 m isobath. Like the trawl fishery, the trap fishery is also managed using input controls in the form of individual transferable effort allocations monitored with a satellite-based vessel management system. The fishery includes six licences allocated to three vessels, operating principally from Onslow.		
				Species targeted		**Fishing methods**	**Fishing depths**
				The catch is made up of around 45-50 different fish species. The fishery generally targets long-lived, high-value demersal scalefish such as red emperor and Rankin cod but also lands significant catches of shorter-lived species such as blue spotted emperor (DPIRD, 2020).		Demersal fish traps.	Approximately 30 m isobath to 200 m isobath (DPIRD n.d.).
				Fishing effort	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Pilbara Trap Managed Fishery caught 597 t in 2022, 662 t in 2021, 584 t in 2020, 680 t in 2019, 563 t in 2018, 573 t in 2017, 495 t in 2016, 510 t in 2015 and 268 t in 2014. (Wakefield et al., 2023a) The total catch of 597 t in 2022 made up 24% of the total catch by the Pilbara Demersal Scale Fishery and exceeded the acceptable catch range for the total catch (Wakefield et al., 2023a).		
				Active licences/vessels	Three active vessels in the trap sector in 2022 (Wakefield et al., 2023a).		
		✓	✓	**Management area**	The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within "Pilbara water", bounded by a line commencing at the intersection of 21° 56'S latitude and the high-water mark on the western side		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Pilbara Line Managed Fishery					of the North-west Cape on the mainland of WA; west along the parallel to the intersection of 21° 56'S latitude and the boundary of the AFZ and north to longitude 120°E.		
				Species targeted		**Fishing method**	**Fishing depths**
				The Pilbara Line Managed Fishery catch is made up around 45-50 different fish species. The fishery targets similar demersal species to the Pilbara Trap and Trawl fisheries, as well as some deeper offshore species such as ruby snapper and eightbar grouper (DPIRD, 2020).		Demersal long line.	Information not available.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are as follows: The Pilbara Line Managed Fishery caught 104 t in 2022, 124 t in 2021, 167 t in 2020, 148 t in 2019, 93 t in 2018, 143 t in 2017, 126 t in 2016, 97 t in 2015 and 40 t in 2014. (Wakefield et al., 2023a) The total catch of 104 t in 2022 made up 4% of the total catch by the Pilbara Demersal Scalefish Fishery and was within the acceptable catch range (Wakefield et al., 2023a).		
				Active licences/vessels	Four active vessels in 2022 (Wakefield et al., 2023a).		
Mackerel Managed Fishery	✓	✓	✓	**Management area**	The commercial fishery extends from the West Coast Bioregion to the WA/ NT border. There are three managed fishing areas: Area 1: Kimberley (121º E to the WA/NT border); Area 2: Pilbara (114º E to 121º E) and Area 3: Gascoyne (27º S to 114º E) and West Coast (Cape Leeuwin to 27º S) (Lewis et al., 2020).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Spanish mackerel (*Scomberomorus commerson*) Grey mackerel (*S. semifasciatus*)		Trolling, baits or lures cast, jigging (Lewis et al., 2020).	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Other species from the genus *Scomberomorus*		
				Fishing effort:	Most of the catch is taken from waters off the Kimberley and Pilbara coasts (Lewis et al., 2020), reflecting the tropical distribution of mackerel species (Molony et al., 2015). Most fishing activity occurs around the coastal reefs of the Dampier Archipelago and Port Hedland area, with the seasonal appearance of mackerel in shallower coastal waters most likely associated with feeding and gonad development before spawning (Mackie et al., 2003). Previous years catch based on State of the Fisheries annual reports provided by DPIRD: 212 t in 2022, 310 t in 2021, 290 t in 2020, 291 t in 2019, 214 t in 2018 (the lowest on record (Lewis et al., 2020), 283 t in 2017, 276 t in 2016, 302 t in 2015 and 322 t in 2014. (Lewis, P., Rynvis, L. 2023) The landed catch in 2021 was 238 t for Spanish mackerel and 10 t for grey mackerel (Lewis and Watt. 2023). The commercial landings for other large pelagic species, such as the amberjack and cobia were 19.7t and 18.2t, and other species contributed to the remaining <10t of the total catch (Lewis and Watt. 2023). All species stocks are sustainable-adequate (Lewis, P., Rynvis, L. 2023).	
				Active licences/vessels:	There were 16 vessels in 2022, primarily from May to November (Lewis, P., Rynvis, L. 2023).	
Marine Aquarium Fish Managed Fishery	✓	✓	✓	**Management area**	The Marine Aquarium Fish Managed Fishery can operate throughout WA State waters. The fishery is typically more active in waters south of Broome and higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Dampier, and Broome (Newman et al., 2021b). There has been recent effort in the waters from Broome northwards to the NT border. (Newman et al., 2023a)	
				Species targeted	**Fishing methods**	**Fishing depth**
				Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms etc.), algae, seagrasses and 'live rock'. The resource potentially includes over 1500 species of marine aquarium fishes (Newman et al., 2021b).	The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).	Information not available.

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	Total catch for the Marine Aquarium Fish Managed Fishery in 2022 was 98,694 fishes and invertebrates, 17.83 t of coral, live rock, and living sand, and 39L of marine plants and live feed. (Newman et al., 2023a) In 2021, the total catch for the Marine Aquarium Fish Managed Fishery was 92,227 fishes (including syngnathids, invertebrates and sponges), 27.97 t of coral. Live rock, and living sand, and 42 L of marine plants and live feed (Newman et al., 2023). In 2020 was 89,925 fishes, 32.12 t of coral, live rock & living sand and <20L of marine plants and live feed (Newman et al., 2021b). Dominant fish species caught in 2022 include spotted blenny (*Istiblennius meleagris*), scribbled angelfish (*Chaetodontoplus duboulayi*), black-axil chromis (*Chromis atripectoralis*), stripey (*Microcanthus strigatus*), Vachell's Glassfish (*Ambassis vachellii*), Margined Coralfish (*Chelmon marginalis*), Black-axil Chromis (*Chromis atripectoralis*), and Blue and Yellow Wrasse (*Anampses lennardi*). (Newman et al., 2023a). The breeding stocks of landed species are classified as sustainable-adequate (Newman et al., 2023a)		
				Active licences/vessels:	13 licences were active in 2022 across the Marine Aquarium Fish Managed Fishery and the Hermit Crab Fishery (Newman et al., 2023a).		
Western Australian Sea Cucumber Fishery (formerly Beche-de-mer Fishery)	✓	✓	✓	**Management area**	Fishing occurs mostly in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemptions. Shark Bay was fished for the first time in 2020 (Hart et al., 2023a) and again in 2021 (Newman et al., 2022).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Western Australian Sea Cucumber Fishery targets two main species: sandfish (*Holothuria scabra*) and redfish (*Actinopyga echinites*).		Diving and wading. Collected by hand.	The targeted species typically inhabit nearshore in shallow depths.
				Fishing effort	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Western Australian Sea Cucumber Fishery caught 56.5 t in 2022, 41.3 t in 2021 3.6 t in 2020, 6.9 t in 2019, 62 t in 2018 (Gaughan and Santoro, 2020), 135 t in 2017, 93 t in 2016 and 38 t in 2015. In 2022, 45.2 t of the total catch consisted of sandfish (*Holothuria scabra*), 10.8 t deepwater redfish (*Actinopyga echinites*), and 0.5 t of black teatfish (*Holothuria whitmaei*) (Newman et al., 2023d). Sandfish were collected from the Kimberley only, which was last fished in 2017 (Hart et al., 2023).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Deepwater redfish and black teatfish were harvested from Shark Bay (under an exception licence granted to native title holders), which was the second time this stock had been fished (Hart et al., 2023). The stock status of sandfish, in the Kimberly, and red fish species landed are considered to be sustainable-adequate, while the sandfish in the Pilbara are not sustainable – inadequate. (Hart et al., 2023f).		
				Active licences/vessels	2 operating vessels operating 2022 (Hart et al., 2023f)		
Onslow Prawn Managed Fishery		✓		**Management area**	The Onslow Prawn Managed Fishery encompasses a portion of the continental shelf off the Pilbara.		
				Species targeted		**Fishing methods**	**Fishing depth**
				The fishery targets: • Western king prawns (*Penaeus esculentus*) • Brown tiger prawns (*Penaeus esculentus*) • Blue endeavour prawns (*Metapenaeus endeavouri.*		Low opening, otter prawn trawl systems.	Fishery and or fishing activity overlaps the Beadon Creek dredging scope (Sporer et al., 2015).
				Fishing effort:	The total landings for the Onslow Prawn Managed Fishery in 2022 are not available due to data confidentiality (Wilkin, et al. 2023b). In 2021 were less than the target catch range of 60 t (Kangas et al.,2023a). 37 days of fishing took place in 2021, compared to 13 days in 2020 (Kangas et al., 2023a). The breeding stocks of banana, brown tiger, and western king prawns are considered sustainable-adequate (Kangas et al., 2023a).		
				Active licences/vessels:	One vessel active in 2021 (Kangas et al., 2023a).		
Pearl Oyster	✓	✓	✓	**Management area**	The Pearl Oyster Managed Fishery is located in shallow coastal waters, designated by four zones extending from Exmouth to Kununurra and the seaward boundary demarcated by the 200 nm EEZ. The fishery is currently managed under the *Pearling Act 1990* (Hart et al., 2023b)		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Managed Fishery				**Species targeted**	**Fishing methods**	**Fishing depth**
				Silver lipped pearl oysters (*Pinctada maxima*).	Drift diving.	Fishing effort is mostly focused in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs et al., 2002).
				Fishing effort:	In 2021, catch was taken from Zones 2 and 3 only with no fishing in Zone 1, which has not been fished from 2017 to 2021 (Hart et al., 2023b). In 2022, the number of wild-caught pearl oysters was 756,531 (Hart et al., 2023d). Total dive hours increased in 2022 from 8,175 hours in 2021 to 10.906 hours due to a 28% increase in harvest. (Hart et al., 2023d). Zones one to three are all considered to be sustainable – adequate (Hart et al., 2023b).	
				Active licences/vessels:	Six active vessels in 2022 (Hart et al., 2023b).	
Pilbara Crab Managed Fishery		✓	✓	**Management area**	The Pilbara Crab Managed Fishery covers inshore waters from Onslow to Port Hedland (between longitudes 115° 5’ 60” E and 120° E), with most activity around Nickol Bay (Johnston et al., 2020b). Areas of the fishery north and east of Exmouth and nearshore are currently closed as per Schedule 2 of the Draft Management Plan for the Pilbara Crab Managed Fishery (DPIRD, 2018b).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus)* (Johnston et al*.,* 2021).	Hourglass traps (Johnston et al., 2021).	Up to 50m deep (Johnston et.al., 2020a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Catch for the Pilbara Crab Managed Fishery was 11.2 t in 2022, 9.7 t in 2021, 0.6 t in 2020 and 19.3 t in 2019. (Johnston et al., 2023a). The total catch in 2021 was a substantial increase from the 2.1 t caught in 2020, which was the lowest landed catch in 20 years (Johnston et al., 2023a). In 2022 the blue swimmer crab catch accounted for 2% of the State commercial catch, all taken by the fishery (Johnston et al., 2023a). The blue swimmer crab stock status is considered sustainable – adequate (Johnston et al., 2023a).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	No information available currently.		
South West Coast Salmon Managed Fishery	✓	✓	✓	**Management area**	The South-west Coast Salmon Managed Fishery operates on various beaches south of the metropolitan area and includes all WA waters north of Cape Beaufort except Geographe Bay.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western Australian salmon (*Arripis truttaceus*)		Beach seine nets.	Information not available.
				Fishing effort:	No fishing occurs north of the Perth metropolitan area, despite the managed fishery boundary extending to Cape Beaufort (WA/Northern Territory border), as advised by WAFIC. The commercial catch for the entire West Coast Nearshore and Estuarine Finfish resource was 302.5 t in 2022. The total catch of Western Australian salmon was 82.9 t in 2022, a decrease from 88.5 t in 2021. The Western Australian Salmon stock status is considered sustainable – adequate. (Duffy et al., 2023c).		
				Active licences/vessels:	The number of active vessels or licences in 2021 is unknown however there were approximately 12 commercial fishers employed in 2018 (Duffy et al., 2023)		
Specimen Shell Managed Fishery	✓	✓	✓	**Management area**	The Specimen Shell Managed Fishery encompasses the entire WA coastline, but effort is concentrated in areas adjacent to the population centres such as Broome, Exmouth, Shark Bay, Geraldton, Perth, Mandurah, the Capes area and Albany (Hart et al., 2023c). There are several closed areas where the fishery is not permitted to operate. These include various marine parks and aquatic reserves, such as Ningaloo Marine Park. The Perth metropolitan area is also important because of its populations of two rare cowrie species (Hart et al., 2023c).		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Specimen Shell Managed Fishery targets the collection of specimen shells for display, collection, cataloguing and sale. About 200 species of Specimen Shell are collected each year. There is some focus of effort on mollusc families that are most		Collection is predominantly by hand when diving to wading in shallow, coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).	For collection by hand, (diver-based) this typically restricts effort to safe diving depths (less than 30 m). ROV collection could enable depths up to 300 m (Hart et al., 2023c).

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				popular with shell collectors, such as cowries, cones, murexes and volutes (Hart et al., 2023c).		
				Fishing effort:	A total of 5,074 specimen shells were collected in 2022, distributed over 200 species. (Hart et al., 2023f) A total of 5,443 specimen shells were collect distributed over 200 species in 2021 (Hart et al., 2023b). Total number of specimen shells collected in 2020 was 4,258 shells, across 206 species (Hart et al., 2021c). Stocks of landed species in the Specimen Shell Managed Fishery are classified at sustainable-adequate (Hart et al., 2023f).	
				Active licences/vessels:	An exemption for the trial of remotely operated underwater vehicles (limited to one per licence) was in place during 2021 (Hart et al., 2023c). There was a total of 30 licences in the fishery, of which 16 licences were fished in 2022. (Hart et al., 2023f). Effort in 2022 was 388 days (Hart et al., 2023f).	
West Australian Abalone Fishery	✓	✓	✓	**Management area**	The Western Australian Abalone Managed Fishery includes all coastal waters from the WA and SA border to the WA and NT border. The fishery is concentrated on the south coast and the west coast. It is divided into eight management areas. The fishery for Greenlip and Brownlip abalone operates in areas 1-4 and the Roe's abalone fishery operates in areas 1, 2, 5, 6, 7 and 8 (DoF, 2011).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Greenlip abalone (*Haliotis laevigata*) Brownlip abalone (*Haliotis conicopora*) Roe's abalone (*Haliotis roei*)	Divers.	Distribution to 5 m depth for Roe's abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total catch for greenlip and brownlip abalone in 2022 was 40.1 t whole weight (26.6 t Greenlip and 13.5 t Brownlip), (Strain et al., 2023d), an increase from 2021 which was 39 t whole weight (greenlip 25.9 t and brownlip 13.1 t) (Strain et al., 2023a). The total catch in 2021 was the lowest catch recorded for Greenlip/Brownlip in 53 years (Strain et al., 2023d). The Roe's abalone resource catch for 2022 was 28.9 t, a 2.6% decrease from the previous season. (Strain et al., 2023c) In 2021 was 29.7 t whole weight, an increase from 18.2 t whole weight in 2020 (Strain et al., 2023a).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					The stock status of greenlip abalone is considered inadequate and brownlip abalone is adequate (Strain et al., 2023a). The stock status of the Roe's abalone is considered adequate (Strain et al., 2023c).		
				Active licences/vessels:	There were 16 registered vessels in 2022 for Greenlip and Brownlip Abalone Fishery (Strain et al., 2023d) and 21 for Roe's, however only a small proportion were active (Strain et al., 2023c).		
Western Australia Joint Authority Northern Shark Fishery	✓			**Management area**	The Western Australia Joint Authority Northern Shark Fishery extends from longitude 12'° 45'E to the Northern Territory border.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blacktip sharks (*Carcharhinus tilstoni*) and spot-tail shark (*Carcharhinus sorrah*).		Gillnets and longlines.	Information not available.
				Fishing effort	Since 2005, 60% of the waters have been closed to finishing and limited on the number of fishing days. No catch has been reported since 2008/2009 (Braccini and Watt. 2023).		
				Active licences/vessels	Information not available.		
West Coast Deep Sea Crustacean Managed Fishery	✓	✓	✓	**Management area**	The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ.		
				Species targeted		**Fishing methods**	**Fishing depth**
				The fishery targets deepwater crustaceans: • Crystal (snow) crab (*Chaceon albus*)		Baited pots, or traps, are operated in long-lines which have between 80 and 180 pots attached to a main line marked by a float at each end.	Deeper than 150 m (and mostly at depths of between 500 m – 800 m). Most of the

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="3"></th></tr>
<tr><td></td><td></td><td></td><td></td><td>• Giant (king) crab (Pseudocarcinus gigas)
• Champagne (spiny) crabs (Hypothalassia acerba)
Catches are dominated by crystal crabs of which 99% of their Total Allowable Catch (TAC) was landed in 2020 (How and Baudains, 2021).</td><td></td><td>commercial Crystal crab catch is taken in depths of 500 m – 800 m (WAFIC[23]).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The total landings were 133.5 t in 2022, 155.5 t in 2021, 156.1 t in 2020, 155.7 t in 2019 and 168 t in 2018.
The total landings of crustaceans in 2022 was dominated by crystal crabs (123.2 t). A further 10 t of champagne crabs and 0.1 t of giant crab were also landed in 2022 (How, et al. 2023c).
The stock status for crystal crab is considered adequate. However, it is likely that the stock biomass is near or below its threshold level, but above its limit level (How and Wiberg. 2023a).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="2">There were seven licence holders with five vessels active in 2022 (How, et al. 2023c).</td></tr>
<tr><td rowspan="4">Abrolhos Islands and Mid-West Trawl Fishery</td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4">✓</td><td>Management area</td><td colspan="2">The Abrolhos Islands and Mid-West Trawl Fishery operates around the Abrolhos Islands within the SWMR.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Saucer scallops (Ylistrum balloti, formerly Amusium balloti)</td><td>Otter trawl.</td><td>Saucer Scallops occur in inshore waters around 40m depth at the Abrolhos Islands (Kangas et.al., 2021a).</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The Abrolhos Islands and Mid-West Trawl Fishery did not fish in 2022 due to the stock being environmentally limited. (Wilkin, et al. 2023a) The fishery landed 123.1 t meat weight (615.1 t whole weight) in 2021, 238.6 t meat</td></tr>
</table>

[23] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					weight (1192.8 t whole weight) in 2020, 159.1 t meat weight (795.6 t whole weight) in 2019 and 31.0 t meat weight (154.8 t whole weight) in 2018. Between 2011 and 2015, the annual pre-season surveys showed very low recruitment (1-year old), due to the 2011 extreme marine heatwave and subsequent poor pawning stock (Kangas et al., 2020). The fishery was closed in 2009, and between 2011 and 2016 (Kangas et al., 2023b).		
				Active licences/vessels:	The number of vessels is unreported. There were 10 licenses in 2021 (Kangas et al., 2023b).		
Broome Prawn Managed Fishery	✓			**Management area**	The Broome Prawn Managed Fishery operates off Broome and forms part of the North Coast Prawn Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawns (*Penaeus esculentus*) Blue endeavour prawns (*Metapenaeus endeavouri*)		Low opening, otter prawn trawl systems	Trawling is generally in waters between 30 and 60 m deep, however can occur down to 100 m (DOEH, 2004).
				Fishing effort:	The DPIRD state of State of the Fisheries annual reports indicate that no fishing efforts occurred in 2022 and extremely low fishing effort occurred in 2021, 2020 and 2019. (Wilkin, et al. 2023b). The stock status of Western king prawns is considered sustainable-adequate (Kangas et al., 2023a).		
				Active licences/vessels:	No boats undertook trial fishing activities in 2022 (Wilkin, et al. 2023b).		
Exmouth Gulf Prawn Managed Fishery			✓	**Management area**	The Exmouth Gulf Prawn Managed Fishery operates within the sheltered waters of Exmouth Gulf. The fishery occupies a total area of 4000 km², with only half of this area being trawled (Fletcher and Santoro, 2015).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*)		The fishery uses low opening, otter prawn trawl systems (Kangas et.al., 2021c).	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Blue endeavour prawn (*Metapenaeus endeavouri*) Banana prawn (*Penaeus merguinensis*)		
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Exmouth Gulf Prawn Managed Fishery landed 898 t in 2022, 777 t in 2021, 673 t in 2020, 821 t in 2019, 880 t in 2018, 713 t in 2017 and 822 t in 2016. (Wilkin et al., 2023c) The total catch comprised of 411 t of brown tiger prawns, 218 t of western king prawns, and 269 t of blue endeavour prawns (Wilkin et al., 2023c). Stock status of landed species is considered sustainable-adequate (Kangas et al., 2023c).	
				Active licences/vessels:	The number of participation vessels is six. Approximately 126 people, including skippers and other crew were employed in 2022 (Wilkin et al., 2023c).	
Gascoyne Demersal Scalefish Managed Fishery			✓	**Management area**	The Gascoyne Demersal Scalefish Managed Fishery is located between the southern Ningaloo Coast to south of Shark Bay with a closure area at Point Maud to Tantabiddi (WAFIC[24]).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Pink snapper (*Chrysophrys auratus*) Goldband snapper (*Pristipomoides multidens*) Other demersal species caught include: • Tropical snappers, • Emperors, • Cods, • Mulloway Trevallies.	Mechanised handlines.	The target species inhabit waters deeper than 20m (Jackson et.al., 2021a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD:	

[24] https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="3"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="2">The Gascoyne Demersal Scalefish Managed Fishery reported a total commercial catch of 166 t in 2022, 164 t in 2020-21, 207 t in 2019-20, 173 t in 2018-19 and 210 t in 2017-18.
The total of commercial catches comprised 42 t of pink snapper, 83 t goldband snapper, and 41 t of other mixed species (Jackson et.al., 2023c).
The stock status for pink snapper is considered recovering, with goldband snapper considered sustainable-adequate (Jackson et.al., 2023c).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="2">Ten vessels fished during 2022, six of which fished for more than 10 days during peak pink snapper season (Jackson et.al., 2023c).</td></tr>
<tr><td rowspan="5">Kimberley Crab Managed Fishery (formerly Kimberley Developing Mud Crab Fishery)</td><td rowspan="5">✓</td><td rowspan="5"></td><td rowspan="5"></td><td>Management area</td><td colspan="2">Kimberley Crab Managed Fishery is one of two small trap-based crab fisheries that exist in the North Coast Bioregion between Cambridge Gulf and Broome (Gaughan and Santoro, 2018). In November 2018, the fishery transitioned from developing to fully managed (Johnston et al., 2020b).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Brown mud crab (Scylla olivacea)
Green mud crab (Scylla serrata)</td><td>Trap.
Exemption holders use crab traps and drop nets in waters adjacent to native title lands (Johnston et al., 2023).</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The total crab landed was 13.6 t in 2022, 9.7 t in 2021, 1.5 t in 2020, 3.2 t in 2018 and 7.4 t in 2019.
In 2022, Kimberley Crab Managed Fishery landed a total catch of 2.4 t of brown mud crab represented the entire reported commercial mud crab catch (Johnston et al., 2023a).
Mud crab species in the managed fishery is considered sustainable-adequate (Johnston et al., 2023a).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">There is an allocation of 1200 units (equivalent to 600 traps) to license holders (Johnston et al., 2023). An equivalent allocation of 600 traps for commercial purposes was provided to Traditional Owner groups through the granting of non-transferable Instruments of Exemption under the Fish Resources Management Act 1994.
Two people were employed in 2022 between August and Octobrt (Johnston et al., 2023a).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Nickol Bay Prawn Managed Fishery		✓		**Management area**	The Nickol Bay Prawn Managed Fishery operates in nearshore and offshore waters of the Pilbara region along the NWS. Trawling has been reported to occur at several locations along the Pilbara coast to the east of the Burrup Peninsula, including within the waters of Nickol Bay (Fletcher and Santoro, 2015).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Banana prawn (*Penaeus merguiensis*) Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*) Blue endeavour prawn (*Metapenaeus endeavouri*)		Low opening, otter prawn trawl systems	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Nickol Bay Prawn Managed Fishery landed 51 t in 2022, 123.4 t in 2021, 202.4 t in 2020, 254 t in 2019 and 81 t in 2018. (Wilkin, et al. 2023b) Of the total landings in 2022, landings were dominated by 42 t banana prawns and 7 t brown tiger, and 2 t Blue Endeavour (Wilkin, et al. 2023b). Fishing effort was 62 boat days, a decrease from 175 days in 2021 (Wilkin, et al. 2023b). The banana prawn stock status within the Nickol Bay Prawn Managed Fishery is considered sustainable-adequate (Wilkin, et al. 2023b).		
				Active licences/vessels:	There were three participating vessels in 2022 (Wilkin, et al. 2023b).		
Northern Demersal Scalefish Managed Fishery	✓			**Management area**	The Northern Demersal Scalefish Managed Fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman et al., 2018). Area 1 permits line fishing only, between the high-water mark and the 30 m isobath. Area 2 permits handline, dropline and fish trap fishing methods and is further divided into zones. Zone A is an inshore area, Zone B comprises the area with most historical fishing activity, and Zone C is an offshore deep slope area representing waters deeper than 200 m (Fletcher et al., 2017).		
				Species targeted		**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Goldband snapper (*Pristipomoides multidens*) Blue-spotted emperor (*Lethrinus punctulantus*) Red emperor (*Lutjanus sebae*) Rankin cod (*Epinephelus multinotatus*)	Handline, dropline and fish trap	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The Northern Demersal Scalefish Managed Fishery landed 1,458 t in 2022, 1,544 t in 2021, 1,419 t in 2020, 1,507t in 2019, and 1,297 t in 2018. In 2022, the majority of the catch was landed from Zone B, with 1,235 t in 2022. The 2022 catch of jobfish group (*Pristipomoides spp*.) was 552 t, 91% of which was goldband snapper (Wakefield et al., 2023a). The stock status of landed species in the managed fishery is classified as sustainable-adequate (Wakefield et al., 2023a).	
				Active licences/vessels:	Eight active vessels in 2022 (Wakefield et al., 2023a).	
Octopus Interim Management Fishery	-	-	-	**Management area**	The Octopus Interim Management Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Octopus djinda, which is closely related to *Octopus tetricus.*	Primary method is baited octopus trap (combination of active trapping via trigger mechanisms, and passive trapping – shelter traps) (Hart et al., 2023d).	In inshore waters to a depth of 70 m (DPIRD, 2018a).
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Commercial catch for the Octopus Interim Management Fishery was 744 t in 2022, 487 t in 2021, 254 t in 2020, 453 t in 2019, 314 t in 2018, 257 t in 2017 and 252 t in 2016 (Hart et al., 2023g). In 2022, the total catch of octopus was 744 t live weight, which was 53% higher than 2021 with a total catch of 487 t (Hart et al., 2023g).	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Octopus stock status in 2022 is considered sustainable-adequate (Hart et al., 2023g).		
				Active licences/vessels:	27 active vessels in 2022 (Hart et al., 2023g).		
Shark Bay Beach Seine and Mesh Net Managed Fishery	-	-	-	**Management area**	The Shark Bay Beach Seine and Mesh Net Managed Fishery operates from Denham.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Whiting *(*yellowfin *Sillago schomburgkii*) Sea mullet *(Mugil cephalus*) Tailor (*Pomatomus saltatrix*) Western yellowfin bream (*Acanthopagrus australis*)		Beach seine and mesh net.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: Total catch was 131 t in 2022,135 t in 2021, 171 t in 2020, 175 t in 2019 and 176 t in 2018. Of the total catch in 2022, 78 t consisted of whiting, 25 t of sea mullet, 16 t of western yellowfin bream, 6 t of tailor, and 1.5 t of pink snapper (Jackson et al., 2023b). The stock status of targeted species is sustainable - adequate (Jackson et al., 2023b).		
				Active licences/vessels:	Five vessels were active in 2022 (Jackson et al., 2023b).		
Shark Bay Crab Managed Fishery	-	-	-	**Management area**	The Shark Bay Crab Managed Fishery operates within the NWMR. It is based primarily in Carnarvon but operates throughout the waters of Shark Bay.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus*)		Trap and trawl.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD:		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th><th colspan="4"></th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="3">The fishery landed 401 t in 2022, 549 t in 2020-21, 638 t in 2019-20, 529 t in 2018-19 and 518 t in 2017-18.
The fishery closed for a period of 18 months in 2012 and 2013 to promote stock recovery, following a series of adverse environmental conditions between 2010 and 2011 (Chandrapavan et al., 2023). Limited commercial fishing resumed under a national quota management system between 2013 and 2017 (Chandrapavan et al., 2023).
The current stock status is sustainable-adequate (Chandrapavan et al., 2023).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">In the trawl sector in 2022 there were 10 licenced vessels based in Carnarvon with an additional eight vessels traveling to Carnarvon. There were three trap vessels. (Chandrapavan et al., 2023a).</td></tr>
<tr><td rowspan="4">Shark Bay Prawn and Scallop Managed Fishery</td><td rowspan="4">-</td><td rowspan="4">-</td><td rowspan="4">-</td><td>Management area</td><td colspan="3">The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns. The Shark Bay Scallop Managed Fishery is usually Western Australia’s most valuable scallop fishery (Kangas et al., 2021b).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Western king prawn (Penaeus latisulcatus)
Brown tiger prawn (Penaeus esculentus)
Endeavour prawns (Metapenaeus endeavouri)
Coral prawns (Metapenaeopsis sp.)
Saucer scallop (Amusium balloti)</td><td>Low-opening otter trawls.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Previous years catch based on State of the Fisheries annual reports provided by DPIRD:
The Shark Bay Prawn Managed Fishery landed 831 t in 2022, 1,303 t in 2021, 1268 t in 2020, 1214 t in 2019, 1091 t in 2018 and 1608 t in 2017.
Of the total landings, 503 t comprised of western king prawn, 326 t of brown tiger prawn, and 2 t of blue endeavour prawn (Wilkin et al., 2023d).
The Shark Bay Scallop Managed Fishery has been managed under a quota management framework since the fishery reopened in 2015 (Kangas et al., 2021b). Scallop landings for Shark Bay were 35 t (177 t meat weight) in 2022, 123.6 t meat weight (618.2 t whole weight) in 2021, 177.1 t meat weight (885.5 t whole weight) in 2020 and 339 t meat weight (1,694 t whole weight) in 2019.
All stocks for target species are considered sustainable-adequate (Wilkin et al., 2023a).</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	In the trawl sector in 2022 there were 10 licenced vessels based in Carnarvon with an additional eight vessels traveling to Carnarvon (Wilkin et al., 2023d). In the Shark Bay Scallop Managed Fishery there are boats licensed to take scallops (11 Class A licenses) and boats that also fish for prawns (18 Class B licenses). There were eight vessels. (Wilkin et al., 2023a).		
South Coast Crustacean Managed Fishery	-	-	-	**Management area**	The South Coast Crustacean Managed Fishery comprises four fisheries: the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Esperance Rock Lobster Managed Fishery, the Southern Rock Lobster Pot Regulation Fishery and the South Coast Deep-Sea Crab Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Southern rock lobster (*Jasus edwardsii*) Western rock lobster (*Panulirus cygnus*) Giant crab (*Pseudocarcinus gigas*) Crystal crab (*Chaceon albus*) Champagne crab (*Hypothalassia acerba*)		Pots.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Crustacean Managed Fishery reported a total catch of 23.8 t in 2022, 27.4 t in 2020-21, 52.5 t in 2019-20, 67.5 t in 2018-19 and 101.2 t in 2017-18 season. In 2022, the total crustacean landings comprised of champagne crabs (3.6 t), southern rock lobster (6.4 t), giant crabs (5.7 t), western rock lobster (5 t), and crystal crabs (3.1 t) (How, et al, 2023d). The stock status is sustainable-adequate (How and Wiberg, 2023b).		
				Active licences/vessels:	The South Coast Crustacean Managed Fishery is based on mobile vessels that employ a skipper and one to three crew. In 2022, there were nine participating vessels. (How, et al, 2023d).		
South Coast Purse Seine Managed Fishery	-	-	-	**Management area**	The South Coast Purse Seine Managed Fishery is active in coastal waters between Cape Leeuwin and the South Australia border. Landings are primarily off Albany, Bremer Bay and Esperance (Norriss and Blazeski, 2020). The managed fishery has five management zones: centred on King George Sound (Zone 1), Albany (Zone 2), Bremer Bay (Zone 3), Esperance (Zone 4) and a developmental zone near Cape Leeuwin (Zone 5) where catches have been negligible (Norriss and Blazeski et al., 2023a).		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Species targeted	**Fishing methods**	**Fishing depth**
				Small pelagic finfish. Australian sardine (pilchards, *Sardinops sagax*) Yellowtail scad (Trachurus novaezelandiae) Australian anchovy (*Engraulis australis*) Scaly mackerel (*Sardinella lemuru*) Maray (*Etrumeus jacksoniensis*). Entitled to take sandy sprat (*Hyperlophus vittatus*) and blue sprat (*Spratelloides robustus*), however not reported caught since 1993/94	Purse seine nets from vessels.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Purse Seine Managed Fishery landed 1,636 t in 2022, 1,255 t in 2020-21, 1498 t in 2019-20, 1064 t in 2018-19 and 2168 t in the 2017-18 season. The total catch in 2022, consisted of >99% of Australian sardines (Norriss and Blazeski et al., 2023c). Fishing effort in 2022 was 576 boat days. (Norriss and Blazeski et al., 2023c). The stock status for the Australian sardine is considered sustainable-adequate (Norriss and Blazeski et al., 2023c).	
				Active licences/vessels:	Seven active vessels in 2022 (Norriss and Blazeski et al., 2023c).	
South-west Trawl Managed Fishery	-	-	-	**Management area**	The South-west Trawl Managed Fishery is a multi-species fishery and includes two of WA's smaller scallop fishing grounds at Fremantle and north of Geographe Bay (Fairclough and Walters, 2018).	
				Species targeted	**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Scallops (*Ylistrum balloti,* formerly *Amusium balloti*) and associated by-products In years of low scallop catches licensees may use trawl gear to target fin-fish species.	Trawl.	Information not available.
				Fishing effort:	Catch levels are unavailable for recent years. The fishery was not active in 2015 or 2016 (Fairclough and Walters, 2018). Effort in the fishery is highly variable and typically fluctuates in response to recruitment variability in saucer scallops and prawns. In 2021 <1% of the allowable area was trawled in the South-west Trawl Managed Fishery (Kangas et al., 2023b). The stock status of scallops is considered sustainable-adequate (Wilkin et al., 2023a).	
				Active licences/vessels:	One vessel fished in 2022 (Wilkin et al., 2023a).	
The South Coast Salmon Managed Fishery	-	-	-	**Management area**	The South Coast Salmon Managed Fishery is one of two fisheries operating in the South Coast Bioregion that target nearshore and estuarine finfish.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Western Australian salmon (*Arripis truttaceus*) Southern school whiting (*Sillago bassensis*) Australian herring (*Arripis georgianus*) King George whiting (*Sillaginodes punctatus*) Sea mullet (*Mugil cephalus*) Estuary cobbler (*Cnidoglanis macrocephalus*) Black bream (*Acanthopagrus butcheri*)	Beach seines, haul nets and gill nets.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD:	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Total catch for the South Coast Estuarine and Nearshore Scalefish and Invertebrates Resource was 267.6 t for 2022, 275.1 t in 2021 and 334 t in 2020. Of this, the South Coast Salmon Managed Fishery landed 48.5 t of Western Australian salmon in 2021, 76 t in 2020 and 56.5 t in 2019. The stock status of target species is sustainable-adequate (Duffy et al., 2023b).		
				Active licences/vessels:	Catch was recorded against eight licences in 2022 (Duffy et al., 2023d).		
West Coast Beach (Beach Bait Fish Net) Managed Fishery	-	-	-	**Management area**	Primarily active in the Bunbury areas in the SWMR, operates between 26° and 33° S		
				Species targeted		**Fishing methods**	**Fishing depth**
				Whitebait		Beach-based haul nets.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total catch of whitebait in 2022 was 23.3 t, an increase from 21.3 t in 2021 (Duffy et al., 2023c). The fishery continues to be environmentally limited with stocks recovering from the 2010/11 marine heat wave (Duffy et al., 2023a). The stock status is inadequate – environmentally limited (Duffy et al., 2023c).		
				Active licences/vessels:	The number of active vessels in 2021 is unknown, however five licensees reported landings of whitebait in 2011 (Smith, et al., 2011)		
West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery	-	-	-	**Management area**	The West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery is part of the Temperate Demersal Gillnet and Demersal Longline Fishery, which operates between 26° and 33° S, and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery, which operates from 33° S to the WA/SA border (Braccini and Blay, 2020).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Gummy shark (*Mustelus antarcticus*) Dusky shark (*Carcharhinus obscurus*) Whiskery shark (*Furgaleus macki*)		Gillnet and longline.	Information not available.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Sandbar shark (*C. plumbeus*) Scalefish are a byproduct.		
				Fishing effort:	Catches of elasmobranchs and fishing effort for the Temperate Demersal Gillnet and Demersal Longline Fishery peaked during the late 1980s and early 1990s and have stabilised at lower levels in recent years (Braccini and watt, 2021). Previous years values from State of the Fisheries annual reports provided by DPIRD: Estimated annual value to the fishery was $0.23 million for 2021-22, $0.17 million for 2020-21, $0.11 million for 2019-20, $0.2 million for 2018-19 and $0.3 million for 2017-18. Stock status for the gummy and whiskery shark is considered sustainable-adequate, with the dusky and sandbar shark status sustainable-recovering (Braccini and Rynvis. 2023).	
				Active licences/vessels:	Vessel and license data is not available. There were approximately 10 to 11 skippers and crew employed during 2020-22 period (Braccini and Rynvis. 2023).	
West Coast Demersal Scalefish Interim Managed Fishery	-	-	-	**Management area**	The West Coast Demersal Scalefish Interim Managed Fishery is the main commercial fishery that targets demersal species in the West Coast Bioregion. It encompasses the waters from just south of Shark Bay down to just east of Augusta and extends seaward to the 200 nm boundary. The fishery is divided into four inshore management areas and one offshore management area.	
				Species targeted	**Fishing methods**	**Fishing depth**
				The resource comprises over 100 species, including: • Baldchin groper (*Choerodon rubescens*) • Dhufish (*Glaucosoma hebraicum*) • Pink snapper *(Pagrus auratus*).	Lines.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The West Coast Demersal Scalefish Interim Managed Fishery retained 240 t in 2022, 259 t in 2021, 227 t in 2020, 254 t in 2019 and 230 t in 2018.	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Management commenced to recover stocks for the West Coast Demersal Scalefish Resource in 2008. Landings since 2008 have been below the stock recovery benchmark of 450 t (Fisher et al., 2023a).		
				Active licences/vessels:	30 licenced vessels operated in 2022 (Fisher et al., 2023a).		
West Coast Purse Seine Managed Fishery	-	-	-	**Management area**	Most of the catch in the West Coast Purse Seine Managed fishery are taken from between Cape Leeuwin and Geraldton. This region is separated into three zones (Northern Development Zone, Perth Metropolitan, and Southern Development zone (Norriss and Blazeski. 2023b).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Small pelagic finfish such as: Scaly mackerel (*Sardinella lemuru*) Pilchards (*Sardinops sagax*) Australian anchovy (*Engraulis australis*) Yellowtail scad (*Trachurus novaezelandiae*) Maray (*Etrumeus teres*)		Purse seine.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total combined catch taken by the West Coast Purse Seine Managed Fishery and developmental licensees was 259 t in 2022, 504 t in 2021, 493 t in 2020, 527 t in 2019 and 340 t in 2018. In 2022, the total catch consisted of 66% scaley mackerel and 31% Australian sardine (Norriss and Blazeski. 2023d). Both the scaley mackerel and Australian sardine have a stock status classified as sustainable-adequate (Norriss and Blazeski. 2023d).		
				Active licences/vessels:	Five active vessels in 2022 (Norriss and Blazeski. 2023d).		
West Coast Rock Lobster			✓	**Management area**	The West Coast Rock Lobster Fishery operates from Shark Bay south to Cape Leeuwin. The fishery is managed using zones, seasons and total allowable catch. The recreational fishery targets the western rock lobsters using baited pots and by diving between North-west Cape and Augusta.		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Managed Fishery				**Species targeted**	**Fishing methods**	**Fishing depth**
				Western rock lobster (*Panulirus cygnus)*	Baited pots.	Information not available.
				Fishing effort:	Previous years catch based on State of the Fisheries annual reports provided by DPIRD: The total catch for the West Coast Rock Lobster Fishery was 6342 t in 2022. (De Lestang, S., and Walsh, A. 2023). Due to COVID-19 related logistics and marketing issues, the 2020-21 season was extended from 12 to 18 months. Since the current extended season is still in progress, data has been reported on a 12-month period (15 Jan 2021 – 14 Jan 2022) (How and Wiberg, L. 2023a). Landings for the 12-month (2021-22) season was 6,334 t and the 18-month 2020-21 season was 9,132 t. Commercial landings over the traditional 12-month season (15 Jan 2020- 14 Jan 2021) were 5,696 t. The fishery landed 6397 t in 2019 and 6400 t in 2018 and 2017. The stock status for the western rock lobster is classified as sustainable-adequate (How and Wiberg, 2023a).	
				Active licences/vessels:	218 vessels were active in the 2022 season (De Lestang, S., and Walsh, A. 2023).	

12.2.1.1 Fish Habitat Protection Areas

Fish Habitat Protection Areas (FHPA's) are areas of special protection and management in Western Australian waters. They are established in areas identified as having a particular value for the protection of fish and their habitats, education and/or aquaculture and which is considered to require a higher level of protection than other parts of the marine environment (DPIRD, 2013). They are set under section 115 of the *Fish Resources Management Act 1994* (WA) for the following purposes:

- the conservation and protection of fish, fish breeding areas, fish fossils or the aquatic eco-system,
- the culture and propagation of fish and experimental purposes related to that culture and propagation; or
- the management of fish and activities relating to the appreciation or observation of fish.

Under the Act, fish can include a range of organisms including finfish, crustaceans, molluscs, corals, seagrass and algae at all stages of their life cycles. FHPAs and a marine reserve declared under the *Conservation and Land Management Act 1984* (WA) cannot exist in the same area (DPIRD, 2013).

Management of an FHPA is designed and carried out to achieve the purposes outlined in a Plan of Management. FHPAs may restrict non-fishing related activities, such as the use of anchors, if they are considered to be inconsistent with the purpose of the FHPA; for example, if there is a risk to damage of fragile marine formations such as coral reefs. Protection may also involve the management of human activities such as dredging, draining of wetlands, and fishing or diving near sensitive marine habitats (DPIRD, 2013). Western Australia has six FHPA's (four within the NWMR and 2 within the SWMR):

- Abrolhos Islands
- Kalbarri Blue Holes
- Miaboolya Beach
- Point Quobba
- Cottesloe Reef
- Lancelin Island Lagoon.

FHPAs within the NWMR

Abrolhos Islands

The Houtman Abrolhos Islands (Abrolhos) is an archipelago of up to 210 small islands and associated reefs located approximately 65-90 km offshore from Geraldton, Western Australia (WA) (Evans *et. al*, 2022). The Abrolhos FHPA includes all waters from the high-water mark of the Abrolhos Islands out to three nautical miles; an area of about 2500 km^2 (Evans *et. al,* 2022).

The islands and waters of the Abrolhos are of significance for both land based (e.g., seabird breeding, migratory shorebirds, carpet pythons, tammar wallabies, and significant flora and vegetation) and marine based values (e.g., diverse and unique range of fish and marine aquatic species, significant commercial and recreational fisheries, aquaculture and marine tourism) (Evans et al., 2022). The reefs of the Abrolhos are extremely diverse, with approximately 184 species of coral, 295 species of marine algae and 389 species of fish (Evans et al., 2022).

The Abrolhos Includes specific regulations such as:

- temporal (seasonal) closures (e.g., closed season for baldchin groper, *Choerodon rubescens*, between the 1st of November and 31st of January),
- spatial closures (e.g., Reef Observation Areas (ROAs) ~64.3km^2 or 2.6% of Abrolhos FHPA),

- recreational fishing specific bag and possession limits (Evans et al., 2022).

The marine state territorial waters of the Abrolhos continue to be managed by the Department of Primary Industries and Regional Development.

Kalbarri Blue Holes

The Blues Holes form part of an inshore coastal limestone reef system to the west of the town of Kalbarri. The northern boundary of the FHPA is located immediately west of the northern end of the Blue Holes car park and extends south from this point for approximately 420 m. The width of the FHPA varies from around 130 m wide at the southern end, to approximately 140 m wide at the northern end (DoF, 2007).

The Kalbarri Blue Holes FHPA includes part of a near-shore limestone reef system, which stretches intermittently from Red Bluff in the South to the Murchison River Mouth in the North (DoF, 2007). To First Nations people, access to the reef system – near to the river mouth – is likely to have made it a significant site for hunting fish and gathering seafood. The river mouth beside Kalbarri, is called 'Wudumalu' or 'Wutumalu' by the local Nhanda language group (DoF, 2014a).

The reef provides a base for a range of recreational activities including swimming, scuba diving and snorkelling. There is an abundance of finfish, shellfish, crustaceans, corals, seagrasses and sponges living there. There are up to 70 species of finfish, 10 types of sponge, and 11 species of coral found in the reef system (DoF, 2014a).

Regulations for protection of Kalbarri Blue Holes include:

- All marine life is protected, and no fishing activities are permitted.
- The use of all motorised vessels (boats and jet skis) is prohibited within the FHPA's waters (DoF, 2014a).

Miaboolya Beach

Miaboolya Beach is an area of the Gascoyne River delta near Carnarvon. The FHPA covers the nearshore waters and extends north to South Bejaling and south to the northern side of the Gascoyne River mouth. In addition, it includes the adjoining mangrove system, associated seasonal creeks and salt marshes (DoF, 2003).

The Miaboolya system has regional importance as a fish nursery and general fish habitat. Native fauna includes juvenile finfish species such as tailor (*Pomatomus saltatrix*), mulloway (*Argyrosomus spp.*) and sand whitin308iliate*ago ciliata*), and various crab species including mud crabs, blue swimmer and green mud crabs (family *Portunidae*). The fish and crab stocks use this environment for breeding, growth and development. Resident and migratory populations of birds, marine turtles and dolphins also exist within the area and contribute to its environmental value (DoF, 2003).

The Miaboolya area is of important cultural and historical value to the Gnulli native title group. The area is a place for traditional food collection and gathering for social occasions (DoF, 2003).

Recreational fishing is permitted however there are restrictions in place by the Department of Fisheries (DoF, 2014b).

Point Quobba

The Point Quobba FHPA adjoins the well-known 'Blowholes' tourist attraction at Quobba Station, 75 km north-west of Carnarvon WA, at the northernmost point of Shark Bay (DoF, 2004).

The marine life and habitats of the area are of considerable scientific and recreational interest and are highly valued in the local community. However, the area is at risk from a high level of use and conflict between users, due to the area's proximity to popular tourism sites, the boat ramp, camping and settlement areas (DoF, 2004).

The marine habitat at Point Quobba is in a transition zone between tropical and temperate climatic zones and is therefore highly diverse. It contains a mix of endemic temperate south-west Australian

species and tropical and temperate Indo-Pacific species. The FHPA provides relatively sheltered breeding and feeding habitat for more than 100 species (DoF, 2015)

Point Quobba lies within the traditional area of the Baiyungu people, who are members of the Gnulli Group. The Baiyungu people use the area regularly, sometimes to collect trochus for consumption at Point Quobba and Black Rock (DoF, 2004).

There is a designated 'restricted area' within the FHPA to protect vulnerable habitats and fish species from human activity. Within this area commercial and recreational fishing and jet-skiing are prohibited. Restrictions on fishing in the rest of the FHPA are defined by the Department of Fisheries (DoF, 2015).

FHPAs within the SWMR

Cottesloe Reef

The Cottesloe reef system stretches intermittently for approximately 4.4 km from a point 300 m south of the artificial surfing reef at the Cable Station to North Street, Cottesloe. It is located on a limestone shelf, which is known locally as the Cottesloe Fringing Bank. This shelf extends approximately 1.5 km offshore from the beach. Limestone pinnacles, elevated platforms, and water-eroded limestone outcrops form most of the surface reef structure. In places, sea-grass patches and kelp beds occur within 100 m of the shoreline (DoF, 2001a).

The reef is readily accessible to the public and intensively used by locals and other Perth metropolitan residents and is therefore vulnerable to human impacts. The reef system and its waters are highly popular for recreational activities including surfing, windsurfing, swimming, paddle skiing, line fishing, spear fishing, snorkelling and scuba diving.

The Cottesloe Reef system contains a unique and diverse range of marine habitats. These include sand, sand with seagrass, limestone reef with large kelp and macroalgae, sponge beds and garden bottoms. In deeper water, corals, sea cucumbers and sponge gardens thrive and the slope of the reef platform at Mudurup Rocks provides habitat for animals such as feather stars and small molluscs, which are protected from heat and drying during low summer tides. An abundance of finfish can be found in and around the reef system, including herring, tailor, skipjack (silver trevally), whiting, morwong and tarwhine (silver bream). The reef is also a breeding ground for squid, Port Jackson sharks and other elasmobranchs including stingrays (DoF, 2001a; DoF 2010).

Regulations for protection of Cottesloe Reef include:

- Spearfishing is prohibited throughout the FHPA.
- Commercial fishing is prohibited throughout the FHPA.
- Recreational fishing (except net fishing) for fish such as tailor, herring, whiting, skipjack and garfish is permitted in the FHPA, subject to recreational fishing rules for the West Coast region.
- Anchoring of any craft in the FHPA is prohibited.
- Five yellow moorings have been provided within the FHPA for use by boats up to 12 m. These moorings are removed during winter (April – November) to prevent damage from winter storms (DoF, 2010).

Lancelin Island Lagoon

Lancelin Island is an emergent limestone feature of the coastal marine environment of the mid-west coast of Western Australia. The island is located approximately 110 km north of Perth and 800 m offshore from the Lancelin town site (DoF, 2001b).

The Lancelin Island Lagoon is a small area of reef habitat on the western side of Lancelin Island and a popular snorkelling and diving destination. Water depth ranges from less than 0.3 m on the intertidal reefs to less than 3 m on the sand or seagrass-covered bottom. The area has a diverse array of benthic marine habitat. During a marine survey of the area, over 200 flora and fauna species

were positively identified, with more remaining unidentified due to the diversity of species (DoF, 2001a).

The management strategy for the Lancelin Island Lagoon includes the following regulations:

- Prohibit all recreational and commercial fishing, aquaculture and collecting in the FHPA.
- Prohibit boat anchorage within the FHPA.
- Investigate the means to prohibit mining and exploration within the FHPA and in adjacent areas where the environmental values of the FHPA may be compromised (DoF, 2001a).

12.2.2 Aquaculture

Aquaculture operations in the northwest are typically restricted to inland and shallow coastal waters.

West Coast Bioregion

Aquaculture activities in the West Coast bioregion, defined by the Department of Primary Industries and Regional Development (DPIRD) (as the government body responsible management of primary industries in WA) are focused on blue mussels and edible oysters (mainly in Cockburn Sound) and marine algae for production of beta-carotene, used as a food additive and as a nutritional supplement. Offshore marine finfish production is also being developed, initially focusing on yellowtail kingfish near Geraldton.

There is also an emerging black pearl industry (from the *Pinctada margaritifera* oyster) in the Abrolhos Islands. As well as expansion in the production of Akoya pearls (small white pearls from *Pinctada fucata martensi*), *Pinctada albina* (small, yellow pearls) and *Pteria penguin*, which are often used to produce half (mabe) pearls in pink and bluish shades.

Aquaculture licences for producing coral and live rock (pieces of old coral reefs colonised by marine life, such as beneficial bacteria, for aquariums) at the Abrolhos Islands have also been issued and other applications are being assessed (DPIRD, 2023).

Gascoyne Coast Bioregion

In the Gascoyne Coast bioregion, aquaculture activities are focused on the blacklip oyster (*Pinctada margaritifera*) and Akoya pearl oyster (*Pinctada imbricata*) (Gaughan and Santoro, 2020). Several hatcheries supply *P. margaritifera* juveniles to the region's developing black pearl farms.

Other aquaculture developments in the Gascoyne Coast bioregion include emerging producers of coral and live rock species for aquariums (DPIRD, 2023).

North Coast Bioregion

Aquaculture activities in the North Coast bioregion is dominated by the production of pearls (from the *Pinctada margaritifera* oyster). A large number of pearl oysters for seeding are obtained from wild stocks and supplemented by hatchery produced oysters, with major hatcheries operating at Broome and around the Dampier Peninsula (DPIRD, 2023). Primary spawning of the pearl oyster occurs from mid-October to December. A smaller secondary spawning occurs in February and March (Gaughan and Santoro, 2020).

Finfish aquaculture in the Kimberley region is dominated by Barramundi located in the Kimberley Aquaculture Development Zone which lies approximately 200 km north-east of Broome. Rock oyster trials are nearing completion near Karratha in the Pilbara region, however there is no commercial production of the species in this region at this stage (DPIRD, 2023).

There is one indigenous project at One Arm Point that operates a marine hatchery that focuses on a variety of ornamental and edible marine species (DPIRD, 2023).

South Coast Bioregion

Aquaculture activities in the South Coast bioregion is dominated by the production of edible oysters (Akoya and rock oysters) and mussels within King George Sound in Albany. Other forms of private aquaculture in the region include sea cage farming of abalone, which are restricted to the South Coast near Augusta (Flinders Bay) and Esperance (Wylie Bay) (DPIRD, 2023).

12.3 Fisheries – Traditional

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

Dugong, fish and marine turtles that move between coastal and Commonwealth waters are important components of the First Nations people's culture and diet. First Nations people continue to actively manage their sea country in coastal waters of WA in order to protect and manage the marine environment, its resources and cultural values.

Indonesian fishers can fish within designated areas under the Australia-Indonesia Memorandum of Understanding regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974 (MoU 74). Traditional fishing is allowed within the MoU Box (Figure 12-9), which encompasses: Ashmore Reef (Pulau Pasir), Cartier Island (Pulau Baru), Seringapatam Reef (Afringan), Scott Reef (Pulau Dato) and Browse Island (Berselan). Restrictions have since been introduced around Ashmore Reef and Cartier Island following their designation as Nature Reserves under the Commonwealth's *National Parks and Wildlife Conservation Act 1975* in 1983 and 2000, respectively.

The MoU allows Indonesian fishers to fish in designated areas using traditional methods only. These methods include reef gleaning, free-diving, hand lining and other non-mechanised methods. Scott Reef is currently the principal reef in the MoU 74 Box and is utilised seasonally by Indonesian fishers to harvest trepang, trochus shells and other reef species. The peak season is July to October due to more favourable wind conditions, and to allow fishers to sun dry their catch on their boat decks (ERM, 2009). Browse Island is also frequently visited by shark fishers who mostly fish along the eastern margin of the MoU 74 Box.

The Agreement between the Government of Australia and the Government of the Republic of Indonesia Relating to Cooperation in Fisheries (*1992 Fisheries Cooperation Agreement*) provides the framework for fisheries and marine cooperation between Australia and Indonesia. Cooperation under the Agreement today takes place under the auspices of the Working Group on Marine Affairs and Fisheries. Research reports on reef top species in the MoU Box indicate that stocks in the area are severely depleted. In 2009 the Working Group on Marine Affairs and Fisheries agreed to a Roadmap for MoU Box Cooperative Management (DAWE, 2020a).

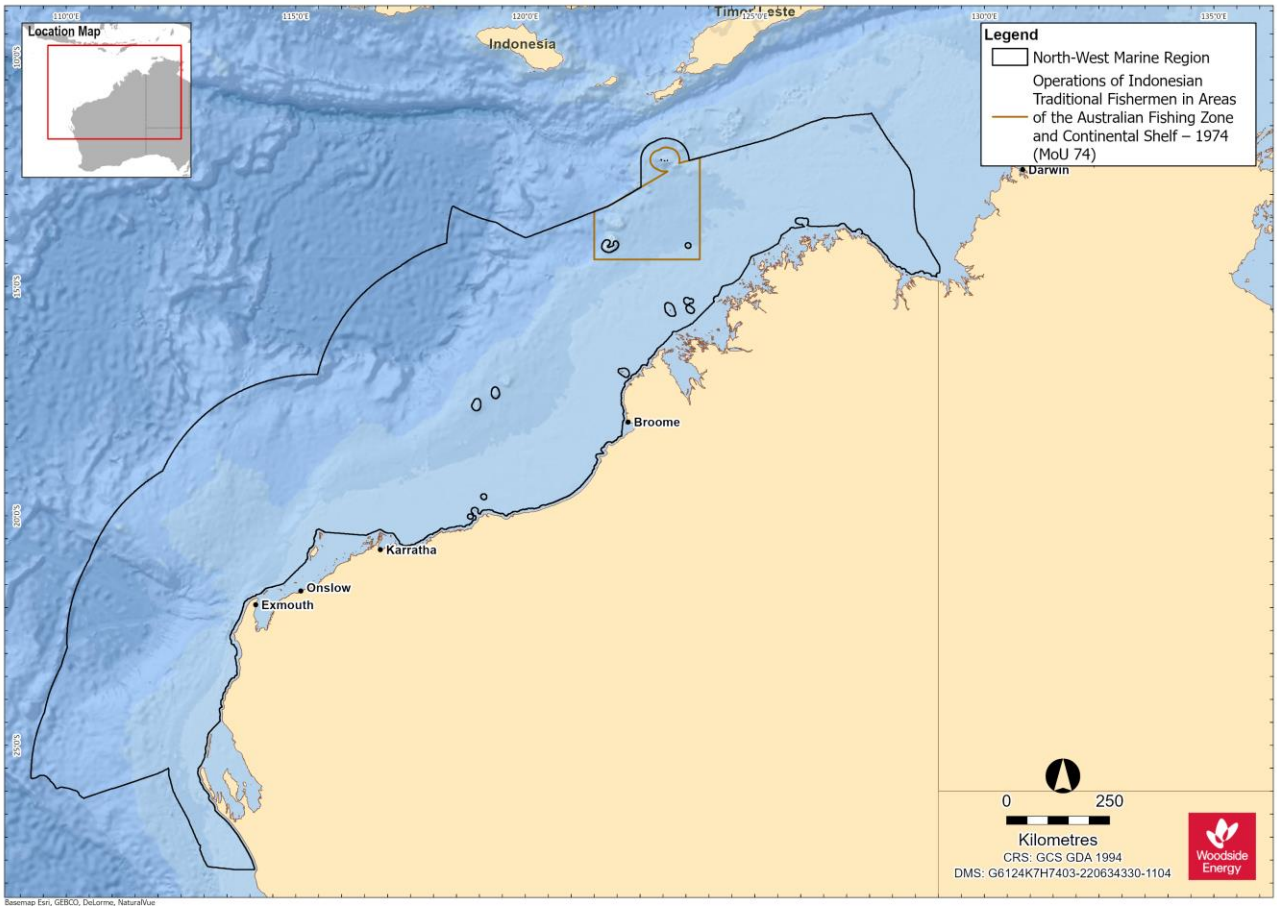


Figure 12-9: MOU 74 Box. Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974

12.4 Tourism and Recreation

Western Australia's tourism sector is important to industry and the economy. In 2022-2023, tourism accounted for 6.8% of WA's total jobs and generated a Gross Total Value Added of $11.9 billion (Tourism Western Australia, 2024a).

The Kimberley, Pilbara and Gascoyne regions are popular visitor destinations for Australian and international tourists. Tourism is concentrated in the vicinity of population centres including Broome, Dampier, Exmouth, Coral Bay and Shark Bay. Recreational and tourism activities include: charter fishing, recreational fishing, diving, snorkelling, marine fauna watching, and yachting (Tourism Western Australia, 2024b).

Australia's Coral Coast and North West had a 27% and 22% growth respectively, in intrastate spend compared to 2019. The state's highest intrastate spend on record occurred with WA residents spending $9.3 billion on trips within the state (Tourism Western Australia, 2024b).

12.4.1 Gascoyne Region

Tourism has the fourth largest economic output of all the major industries of the Gascoyne region (GDC, 2023). It contributes significantly to the local economy in terms of both income and employment. In 2022, the region had over 271,100 overnight visitors and tourism had an average economic output of $182 million between 2021 and 2022 (GDC, 2023).

The COVID-19 pandemic disrupted the tourism industry of the Gascoyne region in previous years, particularly by reducing availability of the overseas workforce. However, the phasing out of restrictions has increased interstate and international travel, and visitor numbers have remained high with inter-state tourism numbers increasing in 2021 in comparison to 2020 (GDC, 2022). The main

attraction of the coastline for tourists is the quality of marine life. The region supports extensive scuba diving, snorkelling and fishing and specialised eco-tourism activities include whale shark and manta ray observation at Ningaloo, and dolphin and dugong viewing in Shark Bay (Newman et al., 2023b). In 2018-19, the Ningaloo region (Ningaloo Reef and the surrounding coastal region Exmouth Gulf, communities of Exmouth and Coral Bay, and adjacent proposed southern coastal reserves and pastoral leases) contributed an estimated $110 million in value added to the WA economy (DCBA, 2020). Ningaloo's economic contribution to WA is attributed to four key types of economic activity, tourism expenditure by international, interstate and WA visitors to the Ningaloo region, commercial fishing in the Exmouth Gulf, recreation activity involving the Reef by residents of the Ningaloo region and management and research relating to the Reef (DCBA, 2020). More than 90% of this value added is attributed to the domestic and international tourists who visit Ningaloo each year (DCBA, 2020). Dark sky tourism flourished in 2023 with an influx of visitors coming together in Exmouth to witness a rare hybrid solar eclipse (GDC, 2023). The natural phenomena brought 1,000's of visitors both interstate and international to the region in April 2023.

The first Cultural Tourism experience was launched in 2022 on the Ningaloo Coast. Departing from Coral Bay, the Cultural Tour provides visitors the opportunity to experience a unique perspective on the coastline's rich cultural heritage and unique environment. The main marine nature-based tourist activities are concentrated around and within the Ningaloo WHA (GDC, 2022). The Aboriginal AstroTourism Project was launched where First Nations people were consulted on night sky constellations and trained in dark sky tourism. Through this program star gazing experiences were successfully delivered to approximately 665 visitors over 10 nights during the Ningaloo Eclipse (GDC, 2023).

12.4.2 Pilbara region

Recreation and tourism activities within the Pilbara are of high social value. Tourism is a key economic driver for the Pilbara with more than 1 million visitors to the region every year. Tourism visitation continued to grow in 2022, with the number of visitors to Karajini National Park in 2022 having doubled in comparison to 2020 (PDC, 2022). Multi-year tourism infrastructure development funding has been provided for the Niminjarra Highway to provide easier access to the Karlamilyi National Park and enhance cultural tourism opportunities and to the Whim Creek Hotel to re-establish a tourism destination between Karratha and Hedland (PDC, 2023).

Recreational fishing within the Pilbara region tends to be concentrated in State waters adjacent to population centres. Recreational fishing is known to occur around the Dampier Archipelago with boats launched from boat ramps around Dampier and Karratha. Once at sea, charter vessels may also frequent the waters surrounding the Montebello Islands (Williamson et al., 2006).

12.4.3 Kimberley Region

Tourism is one of the main industries in the Kimberley region, alongside resources, construction, agriculture and retail (KDC, 2022).

Recreation and tourism activities in the Kimberley region occur predominantly in WA State waters (extending offshore 3 nm from the mainland), adjacent to coastal population centres (e.g. Broome), with a peak in activity during the winter months (dry season). These activities include recreational fishing, diving, snorkelling, wildlife watching and boating (Newman et al., 2023b.

Primary dive locations in the Kimberley region include the Rowley Shoals, including Mermaid Reef AMP, Scott Reef, Seringapatam Reef, Ashmore Reef AMP and Cartier Island (Newman et al., 2023b).

12.5 Shipping

Commercial shipping traffic is high within the NWMR with vessel activities including commercial fisheries, tourism such as cruises, international shipping and oil and gas operations. There are 12 ports adjacent to the NWMR, including the major ports of Dampier, Port Hedland and Broome,

which are operated by their respective port authorities. These ports handle large tonnages of iron ore and petroleum exports in addition to salt, manganese, feldspar chromite and copper (DEWHA, 2008).

Heavy vessel traffic exists within the Pilbara Port Authority management area which recorded 9,594 vessel movements in the Port of Dampier, 6,786 vessel movements in the Port of Port Hedland, and 807 vessel movements in the Port of Ashburton in the 2022/23 reporting period (PPA, 2023). Twenty-six designated anchorages for bulk carriers, petroleum and gas tankers, drilling rigs, offshore platforms, and pipelay vessels are located offshore of Rosemary Island.

In 2012, AMSA established a network of shipping fairways off the northwest coast of Australia. The shipping fairways, while not mandatory, aim to reduce the risk of collision between transiting vessels and offshore infrastructure. The fairways are intended to direct large vessels such as bulk carriers and LNG ships trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure (AMSA, 2013).

12.6 Petroleum Basins

The NWMR supports a number of industries including petroleum exploration and production.

Within the NWMR there are seven sedimentary petroleum basins: Northern and Southern Carnarvon basins, Perth, Browse, Roebuck, Offshore Canning and Bonaparte basins (GA, 2023). Of these, the Northern Carnarvon, Browse and Bonaparte basins hold large quantities of gas and comprise most of Australia's reserves of natural gas (DEWHA, 2008), which is reflected by the level of development in the area. In addition to existing facilities, there are proposed developments in the region. This includes proposals to develop gas and condensate from a number of fields within the NWMR.

In addition to the oil and gas industry, other land-based industries depend upon the marine environment in the nearshore area. These include ports, salt mines such as Karratha and Onslow, LNG onshore processing facilities such as Burrup Hub, Thevenard Island, Barrow Island, Varanus Island, and small-scale desalination plants at Barrow Island, Burrup, Cape Preston, and Onslow.

12.7 Defence

Key Australian Department of Defence (DoD) operational areas and facilities areas of the NWMR for training and operational activities, include:

- An operating logistics base has been established in Dampier to support vessels patrolling the waters around offshore oil and gas facilities. A dedicated navy administrative support facility is also being constructed at the nearby township of Karratha (DEWHA, 2008).
- The Taylor Barracks are the headquarters of the Pilbara regiment, one of three Regional Force Surveillance Units conducting surveillance and reconnaissance of remote areas of northern Australia. This base is located in Karratha (DoD, n.d.).
- The Royal Australian Air Force currently maintains two 'bare bases' in remote areas of WA that are used for military exercises. One of these is the Royal Australian Air Force Base in Learmonth. The Royal Australian Air Force maintains the Commonwealth Heritage listed Learmonth Air Weapons Range Facility, which is located between Ningaloo Station and the Cape Range National Park. The air training area associated with the Learmonth base extends over the offshore region.
- The Royal Australian Air Force Base Curtin is located on the north coast of WA, south-east of Derby and 170 km east of Broome. It provides support for land, air and sea operations aimed to support Australia's northern approaches.
- The Naval Communications Station Harold E. Holt is located ~6 km north of Exmouth. The main role of the station is to communicate at very low frequencies (19.8 kHz) with Australian and United States submarines and ships in the eastern Indian Ocean and the western Pacific Ocean (DEWHA, 2008).

- Areas may be subject to Unexploded Ordnance (UXO) as a result of military activities. These are offshore sites where ammunition and explosives have been dumped, or which have been used as live bombing or firing ranges. Defence maintains a record of sites confirmed as, or reasonably suspected of being affected by UXO. There are several suspected UXO sites in the NWMR (Australian Government Defence, n.d.).

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APPENDIX A. PROTECTED MATTER SEARCH REPORTS FOR NWMR, SWMR AND NMR

The PMST tool conducts searches on a grid-based function. Accordingly, the PMST results can indicate features or species that do not actually intersect or have a presence in the area. To validate search results, comprehensive literature and scientific expertise is used. As such, only species considered relevant to the scope of this document have been described.

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Jun-2024

Figure 1: NWMR PMST subarea 1

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	5
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	9
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	105
Listed Migratory Species:	97

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	65
Commonwealth Heritage Places:	5
Listed Marine Species:	174
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	78
Regional Forest Agreements:	None
Nationally Important Wetlands:	8
EPBC Act Referrals:	317
Key Ecological Features (Marine):	13
Biologically Important Areas:	92
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Shark Bay, Western Australia	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Eighty-mile beach	Within Ramsar site
Roebuck bay	Within 10km of Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris		
Great Knot [862]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Malurus leucopterus leucopterus White-winged Fairy-wren (Dirk Hartog Island), Dirk Hartog Black-and-White Fairy-wren [26004]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
[Zanda latirostris listed as Calyptorhynchus latirostris](#) Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat likely to occur within area
FISH		
[Milyeringa veritas](#) Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
[Ophisternon candidum](#) Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Bettongia lesueur Barrow and Boodie Islands subspecies](#) Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area
[Bettongia lesueur lesueur](#) Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat known to occur within area
[Bettongia penicillata ogilbyi](#) Woylie [66844]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Isoodon auratus barrowensis Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus bernieri Rufous Hare-wallaby (Bernier Island) [66662]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus Central Australian subspecies Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Lagorchestes hirsutus dorreae Rufous Hare-wallaby (Dorre Island) [66663]	Vulnerable	Species or species habitat known to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Species or species habitat known to occur within area
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Osphranter robustus isabellinus Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Perameles bougainville Shark Bay Bandicoot [278]	Endangered	Species or species habitat known to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys fieldi Shark Bay Mouse, Djoongari, Alice Springs Mouse [113]	Vulnerable	Species or species habitat likely to occur within area
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Trichosurus vulpecula arnhemensis](#) Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
[Xeromys myoides](#) Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
PLANT		
[Caladenia barbarella](#) Small Dragon Orchid, Common Dragon Orchid [68686]	Endangered	Species or species habitat may occur within area
[Caladenia hoffmanii](#) Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area
[Eucalyptus beardiana](#) Beard's Mallee [18933]	Vulnerable	Species or species habitat likely to occur within area
[Minuria tridens](#) Minnie Daisy [13753]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Ctenotus zastictus](#) Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Lerista nevinae Nevin's Slider [85296]	Endangered	Species or species habitat known to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat known to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat known to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Breeding likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area
SPIDER		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat known to occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Acrocephalus orientalis](#) Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area
[Calidris pugnax as Philomachus pugnax](#) Ruff [91256]		Roosting known to occur within area
[Calidris ruficollis](#) Red-necked Stint [860]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - EXMOUTH VLF TRANSMITTER STATION [50122]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - LEARMONTH - RAAF BASE [50106]	WA
Defence - LEARMONTH - RAAF BASE [50109]	WA
Defence - LEARMONTH - RAAF BASE [50108]	WA
Defence - LEARMONTH - RAAF BASE [50101]	WA
Defence - LEARMONTH - RAAF BASE [50107]	WA
Defence - LEARMONTH - RAAF BASE [50097]	WA
Defence - LEARMONTH - RAAF BASE [50103]	WA
Defence - LEARMONTH - RAAF BASE [50100]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA
Defence - YAMPI SOUND TRAINING AREA [50145]	WA
Unknown	
Commonwealth Land - [51698]	WA
Commonwealth Land - [51699]	WA
Commonwealth Land - [51707]	WA
Commonwealth Land - [51704]	WA
Commonwealth Land - [51696]	WA
Commonwealth Land - [51705]	WA
Commonwealth Land - [51709]	WA
Commonwealth Land - [51700]	WA
Commonwealth Land - [51706]	WA

Commonwealth Land Name	State
Commonwealth Land - [52110]	WA
Commonwealth Land - [51695]	WA
Commonwealth Land - [51671]	WA
Commonwealth Land - [52104]	WA
Commonwealth Land - [51672]	WA
Commonwealth Land - [51670]	WA
Commonwealth Land - [51055]	WA
Commonwealth Land - [51054]	WA
Commonwealth Land - [51702]	WA
Commonwealth Land - [51053]	WA
Commonwealth Land - [51708]	WA
Commonwealth Land - [51703]	WA
Commonwealth Land - [52198]	WA
Commonwealth Land - [51716]	WA
Commonwealth Land - [52236]	WA
Commonwealth Land - [52099]	WA
Commonwealth Land - [52097]	WA
Commonwealth Land - [51719]	WA
Commonwealth Land - [52100]	WA
Commonwealth Land - [52195]	WA
Commonwealth Land - [52109]	WA
Commonwealth Land - [52098]	WA
Commonwealth Land - [51710]	WA
Commonwealth Land - [51714]	WA
Commonwealth Land - [51715]	WA
Commonwealth Land - [52106]	WA
Commonwealth Land - [52107]	WA

Commonwealth Land Name	State
Commonwealth Land - [51947]	WA
Commonwealth Land - [52108]	WA
Commonwealth Land - [52105]	WA
Commonwealth Land - [52103]	WA
Commonwealth Land - [52102]	WA
Commonwealth Land - [52101]	WA
Commonwealth Land - [51404]	WA
Commonwealth Land - [51403]	WA
Commonwealth Land - [51668]	WA
Commonwealth Land - [51666]	WA
Commonwealth Land - [51667]	WA
Commonwealth Land - [51718]	WA
Commonwealth Land - [51720]	WA
Commonwealth Land - [51717]	WA
Commonwealth Land - [51712]	WA
Commonwealth Land - [51713]	WA
Commonwealth Land - [51711]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Mermaid Reef - Rowley Shoals	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place
Scott Reef and Surrounds - Commonwealth Area	EXT	Listed place
Yampi Defence Area	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans		
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus		
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus		
Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Gallinago megala		
Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura		
Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus fuscus Dusky Sea Snake [1119]		Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Indopacetus pacificus](#) Longman's Beaked Whale [72]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Abrolhos	Habitat Protection Zone (IUCN IV)
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Dampier	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Kimberley	Habitat Protection Zone (IUCN IV)

Park Name	Zone & IUCN Categories
Kimberley	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Roebuck	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)
Abrolhos	National Park Zone (IUCN II)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Dampier	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Kimberley	National Park Zone (IUCN II)
Mermaid Reef	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)
Abrolhos	Special Purpose Zone (IUCN VI)
Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		

Scientific Name	Behaviour	Presence
[Natator depressus](#)		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
[Chelonia mydas](#)		
Green Turtle [1765]	Nesting	Known to occur
May - Jul		
[Lepidochelys olivacea](#)		
Olive Ridley Turtle [1767]	Nesting	Known to occur
Nov-Feb		
[Caretta caretta](#)		
Loggerhead Turtle [1763]	Nesting	Known to occur
Nov - May		
[Eretmochelys imbricata](#)		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Adele Island	Nature Reserve	WA
Airlie Island	Nature Reserve	WA
Bardi Jawi	Indigenous Protected Area	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Management Area	WA
Barrow Island	Marine Park	WA
Bedout Island	Nature Reserve	WA
Bernier And Dorre Islands	Nature Reserve	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Cape Range (South)	National Park	WA

Protected Area Name	Reserve Type	State
Coulomb Point	Nature Reserve	WA
Dambimangari	Indigenous Protected Area	WA
Dirk Hartog Island	National Park	WA
Eighty Mile Beach	Marine Park	WA
Faure Island	Private Nature Reserve	WA
Francois Peron	National Park	WA
Freycinet, Double Islands etc	Nature Reserve	WA
Gnandaroo Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA
Hamelin Pool	Marine Nature Reserve	WA
Jarrkunpungu	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Karajarri	Indigenous Protected Area	WA
Koks Island	Nature Reserve	WA
Lacepede Islands	Nature Reserve	WA
Lalang-garram / Camden Sound	Marine Park	WA
Lalang-garram / Horizontal Falls	Marine Park	WA
Little Rocky Island	Nature Reserve	WA
Locker Island	Nature Reserve	WA
Lowendal Islands	Nature Reserve	WA
Miaboolya Beach	Fish Habitat Protection Area	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA
Muiron Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Muiron Islands	Marine Management Area	WA
Nanga Station	NRS Addition - Gazettal in Progress	WA
Ningaloo	Marine Park	WA
North Kimberley	Marine Park	WA
North Lalang-garram	Marine Park	WA
North Sandy Island	Nature Reserve	WA
North Turtle Island	Nature Reserve	WA
Nyangumarta Warrarn	Indigenous Protected Area	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA
Rocky Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Rowley Shoals	Marine Park	WA
Scott Reef	Nature Reserve	WA
Sedimentary Deposits Reserve	5(1)(g) Reserve	WA
Serrurier Island	Nature Reserve	WA
Shark Bay	Marine Park	WA
Swan Island	Nature Reserve	WA
Tanner Island	Nature Reserve	WA
Tent Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA28968	5(1)(h) Reserve	WA
Unnamed WA36909	5(1)(h) Reserve	WA
Unnamed WA36913	Nature Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed WA37168	5(1)(h) Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA37338	5(1)(h) Reserve	WA
Unnamed WA37383	5(1)(h) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40828	5(1)(h) Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA
Unnamed WA41080	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA
Unnamed WA44667	5(1)(h) Reserve	WA
Unnamed WA44669	5(1)(h) Reserve	WA
Unnamed WA44672	5(1)(h) Reserve	WA
Unnamed WA44673	5(1)(h) Reserve	WA
Victor Island	Nature Reserve	WA
Whalebone Island	Nature Reserve	WA
Yawuru	Indigenous Protected Area	WA
Yawuru Nagulagun / Roebuck Bay	Marine Park	WA
Y Island	Nature Reserve	WA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cape Range Subterranean Waterways	WA
Eighty Mile Beach System	WA
Exmouth Gulf East	WA
Hamelin Pool	WA
Leslie (Port Hedland) Saltfields System	WA
Mermaid Reef	EXT
Shark Bay East	WA
Yampi Sound Training Area	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Cockatoo Island Multi-User Supply Base, WA	2017/7986		Assessment
Gorgon Gas Development	2003/1294		Post-Approval
Koolan Island Operations	2022/09392		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
Midwest Offshore Wind Farm	2022/09264		Assessment
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Ocean Barramundi Expansion Project	2022/09272		Assessment
Optimised Mardie Solar Salt Project	2022/9169		Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Ridley Magnetite Project	2023/09477		Referral Decision
Action clearly unacceptable			
Asian Renewable Energy Hub Revised Proposal, WA	2021/8891	Action Clearly Unacceptable	Completed
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Anketell Point Iron Ore Processing & Export Port	2009/5120	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Balmoral South Iron Ore Mine	2008/4236	Controlled Action	Post-Approval
Binowee Iron Ore Project	2001/366	Controlled Action	Proposed Decision
Browse FLNG Development, Commonwealth Waters	2013/7079	Controlled Action	Post-Approval
Cape Lambert Port B Development	2008/4032	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Construction and operation of a Solar Salt Project, SW Onslow, WA	2016/7793	Controlled Action	Assessment Approach
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of an iron ore mine and associated infrastructure	2010/5630	Controlled Action	Assessment Approach
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Eramurra Industrial Salt Project	2021/9027	Controlled Action	Assessment Approach
Eramurra Industrial Salt Project, near Karratha, WA	2019/8448	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Iron ore mine	2006/2522	Controlled Action	Post-Approval
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Mardie Project, 80 km south west of Karratha, WA	2018/8236	Controlled Action	Post-Approval
Mauds Landing Marina	2000/98	Controlled Action	Completed
Nava-1 Cable System	2001/510	Controlled Action	Completed
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pluton Irvine Island Iron Ore Project	2011/6064	Controlled Action	Proposed Decision
Port Hedland Outer Harbour Development and associated marine and terrestrial in	2008/4159	Controlled Action	Post-Approval
Port Hedland Spoilbank Marina, WA	2019/8520	Controlled Action	Post-Approval
Proposed West Pilbara Iron Ore Project	2009/4706	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Shark Bay Resources Dredging	2020/8717	Controlled Action	Post-Approval
Shark Bay Salt Facilities upgrade for direct ocean disposal of bitterns discharge	2011/5984	Controlled Action	Completed
Simpson Development	2000/59	Controlled Action	Completed
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Torosa South Initial Appraisal Drilling	2007/3500	Controlled Action	Completed
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Yannarie Solar Salt Project	2004/1679	Controlled Action	Completed
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Aquaculture - Barramundi grow out, Yampi Sound	2005/2476	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
archaeological surveys & excavation at historic sites, Cape Inscription	2006/3027	Not Controlled Action	Completed
Baniyas-1 Exploration Well, EP-424, near Onslow	2007/3282	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Cape Lambert Port A Marine Structures Refurbishment Project	2018/8370	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Construction of a Commodities Berth, Wharf and Associated Infrastructure	2008/4129	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Development of iron ore facilities	2013/7013	Not Controlled Action	Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	Not Controlled Action	Completed
Drilling between Kalbarri and Cliff Head	2005/2185	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Expansion of Monkey Mia Resort	2003/1146	Not Controlled Action	Completed
Expansion of the Sino Iron Ore Mine and export facilities, Cape Preston, WA	2017/7862	Not Controlled Action	Completed
Expansion Proposal, Mineralogy Cape Preston Iron Ore Project, Cape Preston, WA	2009/5010	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Extension of Simpson Oil Platforms & Wells	2002/685	Not Controlled Action	Completed
Extention to the existing Blind Strait Black Lip Pearl Oyster Farm	2004/1342	Not Controlled Action	Completed
Gulf Fishing Lodge	2010/5499	Not Controlled Action	Completed
Hadda 1,Flying Foam 1,Magnat 1 exploration drill	2004/1697	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Huascaran-1 exploration well (WA-292-P)	2001/539	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Koolan Island Mine - Reconstruction of seawall and capital dewatering of mine pit,130km northwest of	2016/7848	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235	Not Controlled Action	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA	2014/7160	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Port Hedland Channel Risk and Optimisation Project, WA	2017/7915	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Rail and Port Facilities	2001/474	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telfer Gold Mine Project - Mine and Borefield Extensions and Upgrade of Storage	2002/787	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152	Not Controlled Action	Completed
Walkway Lighting Upgrade	2009/4965	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
2 geotechnical surveys - preliminary and final	2006/2886	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic Survey - Maxima 3D MSS	2006/2945	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
Acacia East Pit Cutback Mining Project,northern Kimberley, WA	2013/6752	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Cape Preston East - Iron Ore Export Facilities, Pilbara, WA	2013/6844	Not Controlled Action (Particular Manner)	Post-Approval
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Conduct an exploration drilling campaign	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Dredging of marine sediment to enable construction of eight berths and a turnin	2010/5678	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Endurance 3D Marine Seismic Data Acquisition Survey	2007/3667	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Geoscience Australia - Marine survey in Browse Basin to acquire data to assist assessment of CO2 sto	2013/6747	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Gigas 2D Pilot Ocean Bottom Cable Marine Seismic Survey	2007/3839	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Koolama 2D Seismic Survey Dampier Basin	2010/5420	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine Geotechnical Drilling Program	2008/4012	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	Not Controlled Action (Particular Manner)	Post-Approval
Millstream 20GL Pipeline, Bungaroo, Borefield Integration	2012/6379	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Nelson Point Dredging	2009/4920	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Outer Canning exploration drilling program off NW coast of WA	2012/6618	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Phoenix 3D Seismic Survey, Bedout Sub-Basin	2010/5360	Not Controlled Action (Particular Manner)	Post-Approval
Pilot Appraisal Well - Torosa South 1	2008/3991	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Port Headland Outer Harbour Pre-construction Pilling program	2012/6341	Not Controlled Action (Particular Manner)	Post-Approval
Port of Port Hedland channel marker replacement project, WA	2017/8010	Not Controlled Action (Particular Manner)	Post-Approval
Port Walcott upgrade, dredging & spoil disposal, & channel realignment	2006/2806	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Repsol 3d & 2D Marine Seismic Survey	2012/6658	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Rosebud 3D Marine Seismic Survey in WA-30-R and TR/5	2012/6493	Not Controlled Action (Particular Manner)	Post-Approval
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Sampling of Stromatolites, additional sites, Mamelin Pool,WA	2013/7071	Not Controlled Action (Particular Manner)	Post-Approval
Sampling of Stromatolites and Sediments	2012/6307	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Scarborough Development nearshore component, NWS, WA	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval
Schild MC3D Marine Seismic Survey	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval
Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval
Scott Reef Seismic Research	2006/2647	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Torosa-5 Apraisal Well, WA-30-R	2008/4430	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Tridacna 3D Ocean Bottom Cable Marine Seismic Survey	2011/5959	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
upgrade of 3 community recreation sites	2005/2349	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Useless Loop Port Maintenance Works and Infrastructure Upgrade	2009/4791	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Veritas Voyager 2D Marine Seismic Survey	2009/5151	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Woodside Southern Browse 3D Seismic Survey, WA	2007/3534	Not Controlled Action (Particular Manner)	Post-Approval
Zeemeermin MC3D seismic survey, Browse Basin, Offshore WA	2009/5023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Aurora extension MC3D Marine Seismic Survey	2011/5887	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Experimental Study of Behavioural and Physiological Impact on Fish of Seismic Ex	2006/2625	Referral Decision	Completed
Mardie Salt Project, Pilbara region, WA	2018/8183	Referral Decision	Completed
Outer Harbour Development and associated marine and terrestial infrastructure	2008/4148	Referral Decision	Completed
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Tidal Power Generation Turbine	2009/5235	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Ancient coastline at 90-120m depth	South-west
Canyons linking the Argo Abyssal Plain with the Scott Plateau	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west
Wallaby Saddle	North-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging likely	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging likely	Known to occur

Scientific Name	Behaviour	Presence
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Migration likely	Known to occur
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging	Likely to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Migration	Known to occur
Dugong dugon Dugong [28]	Migration likely	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Migration corridor	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Migration corridor	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Migration corridor	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
River shark		
Pristis clavata Dwarf Sawfish [68447]	Foraging	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Juvenile	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Nursing	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Pupping	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Pristis pristis Freshwater Sawfish [60756]	Nursing	Likely to occur
Pristis pristis Freshwater Sawfish [60756]	Nursing	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Pupping	Likely to occur
Pristis zijsron Green Sawfish [68442]	Foraging	Known to occur
Pristis zijsron Green Sawfish [68442]	Nursing	Known to occur
Pristis zijsron Green Sawfish [68442]	Pupping	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high	Known to occur

Scientific Name	Behaviour	Presence
	numbers)	
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Resting	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Rhincodon typus Whale Shark [66680]	Foraging (high density prey)	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur

Scientific Name	Behaviour	Presence
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Jun-2024

NWMR PMST sub area 2 (North area)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	8
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	53
Listed Migratory Species:	64

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	1
Listed Marine Species:	107
Whales and Other Cetaceans:	27
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	7
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	14
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	118
Key Ecological Features (Marine):	7
Biologically Important Areas:	57
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Natural		
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Ashmore reef national nature reserve	Within Ramsar site
Ord river floodplain	Within 10km of Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species		[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica menzbieri		
Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti		
Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding known to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat may occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		

Scientific Name	Threatened Category	Presence Text
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat known to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Varanus mitchelli		
Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki		
Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Breeding known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Migratory Marine Species		

Scientific Name	Threatened Category	Presence Text
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Unknown	
Commonwealth Land - [52278]	ACI
Commonwealth Land - [52276]	ACI
Commonwealth Land - [52277]	ACI

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Ashmore Reef National Nature Reserve	EXT	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area overfly marine area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Anous minutus Black Noddy [824]		Breeding known to occur within area
Anous stolidus Common Noddy [825]		Breeding known to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Phaethon rubricauda		
Red-tailed Tropicbird [994]		Breeding known to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]		Breeding known to occur within area
Sula dactylatra		
Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster		
Brown Booby [1022]		Breeding known to occur within area
Sula sula		
Red-footed Booby [1023]		Breeding known to occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Bhanotia fasciolata		
Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Aipysurus fuscus Dusky Sea Snake [1119]		Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)

Park Name	Zone & IUCN Categories
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Ashmore Reef	Recreational Use Zone (IUCN IV)
Ashmore Reef	Sanctuary Zone (IUCN Ia)
Cartier Island	Sanctuary Zone (IUCN Ia)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Balanggarra	Indigenous Protected Area	WA
Browse Island	Nature Reserve	WA
Dambimangari	Indigenous Protected Area	WA
Lalang-garram / Camden Sound	Marine Park	WA
Lesueur Island	Nature Reserve	WA
Low Rocks	Nature Reserve	WA
Niiwalarra Islands	National Park	WA
North Kimberley	Marine Park	WA
North Lalang-garram	Marine Park	WA

Protected Area Name	Reserve Type	State
Pelican Island	Nature Reserve	WA
Prince Regent	National Park	WA
Unnamed WA41775	5(1)(h) Reserve	WA
Unnamed WA44677	5(1)(h) Reserve	WA
Uunguu	Indigenous Protected Area	WA

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Ashmore Reef	EXT

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
Project Crux Cable Lay and Operation	2022/09441		Completed
Project Fitzroy Expansion Offshore Cable Lay	2023/09674		Referral Decision
Controlled action			
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Audacious Oil Field Standalone Development	2001/407	Controlled Action	Completed
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed
Decommissioning of Challis Oilfield	2003/942	Controlled Action	Post-Approval
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well	2002/755	Controlled Action	Post-Approval
Prelude Floating Liquefied Natural Gas Facility and Gas Field Development	2008/4146	Controlled Action	Post-Approval
PTTEP AA Floating LNG Facility	2011/6025	Controlled Action	Completed
Not controlled action			
2D seismic survey, exploration permit NT/P67	2004/1587	Not Controlled Action	Completed
2D Seismic Survey in Permit Areas WA-318-P & WA-319-P, near Cape Londonderry	2004/1687	Not Controlled Action	Completed
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
AEC International Hydrocarbon Well Puffin 6	2000/36	Not Controlled Action	Completed
Audacious-3 oil drilling well	2003/1042	Not Controlled Action	Completed
Backpacker-1 Offshore Hydrocarbon Exploration Well	2001/300	Not Controlled Action	Completed
Coot-1 hydrocarbon exploration well, Permit Area AC/L2 or AC/L3	2001/296	Not Controlled Action	Completed
Crux-A and Crux-B appraisal wells, Petroleum Permit Area AC/P23	2006/2748	Not Controlled Action	Completed
Crux gas-liquids development in permit AC/P23	2006/3154	Not Controlled Action	Completed
Drilling of 12 Hydrocarbon Exploration Wells, Permit Area WA-371-P	2006/3005	Not Controlled Action	Completed
Drilling of exploration well Audacious-1 in AC/P17	2000/5	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Drilling of Marina-1 Exploration Well	2007/3586	Not Controlled Action	Completed
Echuca Shoals-2 Exploration of Appraisal Well	2006/3020	Not Controlled Action	Completed
Exploration Drilling in AC/P17, AC/P18 and AC/P24	2001/359	Not Controlled Action	Completed
Exploration Well AC/P23	2001/234	Not Controlled Action	Completed
Kaleidoscope exploration well	2001/182	Not Controlled Action	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed
Montara-3 Offshore Hydrocarbon Exploration Well Permit Area AC/RL3	2001/489	Not Controlled Action	Completed
Nexus Drilling Program NT-P66	2007/3745	Not Controlled Action	Completed
P30 Hydrocarbon Exploration Well	2001/293	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Puffin Oil wells 7, 8 & 9 development	2005/2336	Not Controlled Action	Completed
Saucepan 1 Exploration Well ACP23	2000/2	Not Controlled Action	Completed
Skua and Swift Oilfields	2006/3195	Not Controlled Action	Completed
Strumbo-1 Gas Exploration Well Permit Area WA-288-P	2002/884	Not Controlled Action	Completed
Thresher-1 Well	2000/84	Not Controlled Action	Completed
Not controlled action (particular manner)			
2 (3D) Marine Seismic Surveys	2009/4994	Not Controlled Action (Particular Manner)	Completed
2D and 3D Seismic Survey	2011/6197	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
2D and 3D Seismic Survey WA-405-P	2009/5104	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2008/4133	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey within permit area WA-318-P	2007/3879	Not Controlled Action (Particular Manner)	Post-Approval
2D or 3D Marine Seismic Survey in Petroleum Permit Area AC/P35	2009/4864	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Marine Survey	2001/363	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D Marine Seismic Survey, Permit AC/P 23	2005/2364	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, petroleum exploration permit AC/P33	2006/2918	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey of AC/P4, AC/P17 and AC/P24	2006/2857	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey WA-406-P Bonaparte Basin	2007/3904	Not Controlled Action (Particular Manner)	Post-Approval
AC/P37 3D Seismic Survey Ashmore Cartier	2007/3774	Not Controlled Action (Particular Manner)	Post-Approval
Auralandia 3D marine seismic survey	2011/5961	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Bassett 3D Marine Seismic Survey	2010/5538	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Seismic and Bathymetric Survey	2012/6295	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Canis 3D Marine Seismic Survey	2008/4492	Not Controlled Action (Particular Manner)	Post-Approval
Cartier East and Cartier West 3D Marine Seismic Surveys	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Conduct an exploration drilling campaign	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of Audacious-5 appraisal well	2008/4327	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of Exploration & Appraisal Wells Braveheart-1 & Cornea-3	2009/5160	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of two appraisal wells	2011/5840	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Campaign	2011/6047	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Exploration Drilling Campaign, Browse Basin, WA-341-P, AC-P36 and WA-343-P	2013/6898	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling in Permit Areas WA-402-P & WA-403-P	2010/5297	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Fishburn2D Marine Seismic Survey	2012/6659	Not Controlled Action (Particular Manner)	Post-Approval
Floyd 3D and Chisel 3D Seismic Surveys	2011/6220	Not Controlled Action (Particular Manner)	Post-Approval
Gicea 3D Marine Seismic Survey	2008/4389	Not Controlled Action (Particular Manner)	Post-Approval
Gold 2D Marine Seismic Survey Permit Areas WA375P and WA376P	2009/4698	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Malita West 3D Seismic Survey WA-402-P and WA-403-P	2007/3936	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey 2012	2012/6310	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval
NT/P80 2010 2D Marine Seismic Survey	2010/5487	Not Controlled Action (Particular Manner)	Post-Approval
Octantis 3D Marine Seismic Survey, Permit Area AC/P41 off northern Western Australia	2007/3369	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval
Sandalford 3D Seismic Survey	2012/6261	Not Controlled Action (Particular Manner)	Post-Approval
Santos Petrel-7 Offshore Appraisal Drilling Programme (Bonaparte Basin)	2011/5934	Not Controlled Action (Particular Manner)	Post-Approval
Schild MC3D Marine Seismic Survey	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval
Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Searcher bathymetry & geochemical seismic survey, Brawse Basin,Timor Sea,WA	2013/6980	Not Controlled Action (Particular Manner)	Post-Approval
Sonar and Acoustic Trials	2001/345	Not Controlled Action (Particular Manner)	Post-Approval
Songa Venus Drilling and Testing Operations	2009/5122	Not Controlled Action (Particular Manner)	Post-Approval
Thoar 3D Marine Seismic Survey	2010/5668	Not Controlled Action (Particular Manner)	Post-Approval
Tiffany 3D Seismic Survey	2010/5339	Not Controlled Action (Particular Manner)	Post-Approval
Tow West Atlas wreck from present location to boundary of EEZ	2010/5652	Not Controlled Action (Particular Manner)	Post-Approval
Ursa 3D Marine Seismic Survey	2008/4634	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Zeppelin 3D Seismic Survey	2011/6148	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Nova 3D Seismic Survey, WA 442-NT/P81, Joseph Bonaparte Gulf	2013/6820	Referral Decision	Completed
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	North-west
Carbonate bank and terrace system of the Sahul Shelf	North-west
Continental Slope Demersal Fish Communities	North-west
Pinnacles of the Bonaparte Basin	North
Pinnacles of the Bonaparte Basin	North-west
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Breeding	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Significant habitat	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Significant habitat - unknown behaviour	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Likely to occur
Chelonia mydas Green Turtle [1765]	Mating	Likely to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Likely to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur

Scientific Name	Behaviour	Presence
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 11-Jul-2024

Figure 1: NMR PMST area

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	82
Listed Migratory Species:	82

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	6
Commonwealth Heritage Places:	None
Listed Marine Species:	145
Whales and Other Cetaceans:	25
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	21
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	25
Regional Forest Agreements:	None
Nationally Important Wetlands:	7
EPBC Act Referrals:	80
Key Ecological Features (Marine):	10
Biologically Important Areas:	26
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Melanodryas cucullata melvillensis Tiwi Islands Hooded Robin, Hooded Robin (Tiwi Islands) [67092]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pluvialis squatarola		
Grey Plover [865]	Vulnerable	Roosting known to occur within area
Probosciger aterrimus macgillivrayi		
Palm Cockatoo (Australian) [67033]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat known to occur within area
Tyto novaehollandiae melvillensis		
Tiwi Masked Owl, Tiwi Islands Masked Owl [26049]	Endangered	Species or species habitat known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat may occur within area
MAMMAL		
Antechinus bellus		
Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat known to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Hipposideros semoni Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180]	Vulnerable	Species or species habitat may occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area
Mesembriomys gouldii melvillensis Black-footed Tree-rat (Melville Island) [87619]	Vulnerable	Species or species habitat known to occur within area
Mesembriomys gouldii rattoides Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat [87620]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Notomys aquilo		
Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area
Petrogale concinna canescens		
Nabarlek (Top End) [87606]	Endangered	Species or species habitat may occur within area
Phascogale pirata		
Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat likely to occur within area
Rhinolophus robertsi		
Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat [87639]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus		
Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sminthopsis butleri		
Butler's Dunnart [302]	Vulnerable	Species or species habitat known to occur within area
Trichosurus vulpecula arnhemensis		
Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat known to occur within area
Xeromys myoides		
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Bruguiera x hainesii		
Haines's Orange Mangrove [91351]	Critically Endangered	Species or species habitat may occur within area
Burmannia championii listed as Burmannia sp. Bathurst Island (R.Fensham 1021)		
[93461]	Endangered (listed as Burmannia sp. Bathurst Island	Species or species habitat likely to occur within area
Calophyllum bicolor		
[11371]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dendrobium bigibbum Cooktown Orchid [10306]	Vulnerable	Species or species habitat likely to occur within area
Dendrobium carronii listed as Cepobaculum carronii an orchid [10822]	Vulnerable	Species or species habitat likely to occur within area
Dendrobium johannis Chocolate Tea Tree Orchid [13585]	Vulnerable	Species or species habitat likely to occur within area
Elaeocarpus miegei [65147]	Endangered	Species or species habitat may occur within area
Tarennoidea wallichii [65173]	Endangered	Species or species habitat likely to occur within area
Typhonium jonesii a herb [62412]	Endangered	Species or species habitat likely to occur within area
Typhonium mirabile a herb [79227]	Endangered	Species or species habitat likely to occur within area
Vappodes phalaenopsis Cooktown Orchid [78894]	Vulnerable	Species or species habitat likely to occur within area
Xylopia monosperma a shrub [82030]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat likely to occur within area
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Cryptoblepharus gurrmul Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area
Elseya lavarackorum Gulf Snapping Turtle [67197]	Endangered	Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki		
Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Glyphis glyphis		
Speartooth Shark [82453]	Critically Endangered	Species or species habitat known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sterna sumatrana Black-naped Tern [800]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
[Dugong dugon](#) Dugong [28]		Species or species habitat known to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
[Isurus oxyrinchus](#) Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis as Sousa chinensis](#) Australian Humpback Dolphin [87942]		Breeding known to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
[Cecropis daurica](#) Red-rumped Swallow [80610]		Species or species habitat known to occur within area
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat may occur within area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Attorney-General - Australian Government Solicitor	
Commonwealth Land - Australian Government Solicitor [70332]	NT
Defence	
Defence - MT GOODWIN RADAR SITE [70063]	NT
Defence - QUAIL ISLAND BOMBING RANGE [70003]	NT

Commonwealth Land Name	State
Defence - RIMBIJA ISLAND RAAF RADIO BEACON [70074]	NT
Unknown	
Commonwealth Land - [71140]	NT
Commonwealth Land - [70995]	NT

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Sterna sumatrana Black-naped Tern [800]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Cosmocampus maxweberi Maxweber's Pipefish [66209]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus macrorhynchus Whiskered Pipefish, Ornate Pipefish [66222]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippichthys spicifer Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus zebra Zebra Seahorse [66241]		Species or species habitat may occur within area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Microphis brachyurus Short-tail Pipefish, Short-tailed River Pipefish [66257]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		

Scientific Name	Threatened Category	Presence Text
[Dugong dugon](#) Dugong [28]		Species or species habitat known to occur within area
Reptile		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Crocodylus johnstoni](#) Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
[Emydocephalus annulatus](#) Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis caerulescens Dwarf Sea Snake [1103]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis melanosoma Black-banded Robust Sea Snake [1109]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis vorisi Estuarine Sea Snake [25927]		Species or species habitat may occur within area
Hydrophis zweiffei as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Laticauda colubrina Yellow-lipped Sea Krait [1092]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Microcephalophis gracilis as Hydrophis gracilis Graceful Small-headed Sea Snake, Slender Sea Snake [87375]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Parahydrophis mertoni Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Limmen	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Habitat Protection Zone (IUCN IV)
Wessel	Habitat Protection Zone (IUCN IV)
West Cape York	Habitat Protection Zone (IUCN IV)
Arafura	Multiple Use Zone (IUCN VI)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)

Park Name	Zone & IUCN Categories
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Gulf of Carpentaria	National Park Zone (IUCN II)
Oceanic Shoals	National Park Zone (IUCN II)
West Cape York	National Park Zone (IUCN II)
West Cape York	National Park Zone (IUCN II)
Arafura	Special Purpose Zone (IUCN VI)
Arnhem	Special Purpose Zone (IUCN VI)
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
West Cape York	Special Purpose Zone (IUCN VI)
Arafura	Special Purpose Zone (Trawl) (IUCN VI)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)
Wessel	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles

[Resource Information]

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Dermochelys coriacea Leatherback Turtle [1768]	Nesting	Known to occur
May - Jul		

Scientific Name	Behaviour	Presence
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Nesting	Known to occur

Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Anindilyakwa	Indigenous Protected Area	NT
Barranyi (North Island)	National Park	NT
Crocodile Islands Maringa	Indigenous Protected Area	NT
Crocodile Islands Maringa	Indigenous Protected Area	NT
Dhimurru	Indigenous Protected Area	NT
Djelk	Indigenous Protected Area	NT
Djelk - Stage 2	Indigenous Protected Area	NT
Eight Mile Creek	Fish Habitat Area (A)	QLD
Finucane Island	National Park	QLD
Garig Gunak Barlu	Marine Park	NT
Keep River	Proposed National Parks Act park or park addition	NT
Limmen	National Park	NT
Limmen Bight	Marine Park	NT
Marthakal	Indigenous Protected Area	NT
Morning Inlet - Bynoe River	Fish Habitat Area (A)	QLD

Protected Area Name	Reserve Type	State
Nassau River	Fish Habitat Area (A)	QLD
Nijinda Durlga	Indigenous Protected Area	QLD
Pine River Bay	Fish Habitat Area (A)	QLD
Pungalina - Seven Emu	Private Nature Reserve	NT
Rutland Plains	Nature Refuge	QLD
South-East Arnhem Land	Indigenous Protected Area	NT
Thuwathu/Bujimulla	Indigenous Protected Area	QLD
Thuwathu/Bujimulla	Indigenous Protected Area	QLD
Yanyuwa (Barni - Wardimantha Awara)	Indigenous Protected Area	NT

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cobourg Peninsula System	NT
Finniss Floodplain and Fog Bay Systems	NT
Jardine River Wetlands Aggregation	QLD
Limmen Bight (Port Roper) Tidal Wetlands System	NT
Northeast Karumba Plain Aggregation	QLD
Southeast Karumba Plain Aggregation	QLD
Southern Gulf Aggregation	QLD

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Arnhem Space Centre Operations (Down Range Recovery)	2023/09657		Assessment
Aurukun Bauxite Project	2020/8624		Assessment
Darwin Pipeline Duplication (DPD) Project	2022/09372		Post-Approval
Darwin Pipeline Duplication DPD Project	2022/9166		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Tiwi H2 Project	2022/09347		Assessment
Controlled action			
Andranangoo Creek & Lethbridge Bay mineral sand mining	2005/2155	Controlled Action	Completed
Bauxite Hill Mining and Barging Project	2015/7538	Controlled Action	Post-Approval
Bauxite Hills Mine and Port Project	2012/6246	Controlled Action	Completed
Blacktip Project - Wharf Construction	2007/3293	Controlled Action	Completed
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Darwin to Moomba Gas Pipeline	2001/213	Controlled Action	Completed
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
Hardwood Plantation	2001/229	Controlled Action	Post-Approval
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Pisolite Hills bauxite mine and associated infrast	2008/4046	Controlled Action	Completed
PNG-Qld Gas Pipeline - Gove Lateral	2006/2615	Controlled Action	Completed
Roper Bar Iron Ore Mine and Transport Infrastructure	2011/6079	Controlled Action	Completed
Shipping Channel Enhancement	2010/5431	Controlled Action	Completed
Snake Bay Barramundi Sea Cage Farm	2005/2150	Controlled Action	Completed
South of the Embley Bauxite Mine Extension, including Construction of Port and Infrastructure	2008/4435	Controlled Action	Completed
South of the Embley Bauxite Mining Project	2010/5642	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Tassie Shoal Gas Reforming and Methanol Production Plants - NT/P48	2000/108	Controlled Action	Post-Approval
Tassie Shoal LNG Project	2003/1067	Controlled Action	Post-Approval
Trans-territory Gas Pipeline	2003/1186	Controlled Action	Completed
Not controlled action			
2D seismic survey, exploration permit NT/P67	2004/1587	Not Controlled Action	Completed
2D Seismic Survey in Permit Areas WA-318-P & WA-319-P, near Cape Londonderry	2004/1687	Not Controlled Action	Completed
Barossa-1 (NT/P69), Caldita-2 (NT/P61) exploration wells	2006/2793	Not Controlled Action	Completed
Caldita-1 Hydrocarbon Exploration Well, NT/P61	2004/1854	Not Controlled Action	Completed
Construction and operation of Radar Infrastructure	2004/1406	Not Controlled Action	Completed
Cox Peninsular Remediation Project, NT	2015/7587	Not Controlled Action	Completed
Dredging of Weipa South Channel	2003/1311	Not Controlled Action	Completed
Eastern Leases 2010 Exploration Drilling Program	2010/5455	Not Controlled Action	Completed
Geo-scientific survey	2005/2004	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed
Nexus Drilling Program NT-P66	2007/3745	Not Controlled Action	Completed
NT/P68 2007 Two Well Drilling Program	2007/3569	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D and 3D Seismic Survey	2011/6197	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey, Permit Area Q23P	2009/4925	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey - Petroleum Exploration Area NT/P68, Eastern Bonaparte Basin	2006/2922	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2009/4681	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey	2006/2729	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2006/2980	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2008/4121	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 3D & 2D Seismic Survey, in NT/P82, Timor Sea	2012/6398	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Bonaparte Basin Barossa Appraisal Drilling Campaign, NT	2012/6481	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Basin Seabed Mapping Survey	2009/4951	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Seismic and Bathymetric Survey	2012/6295	Not Controlled Action (Particular Manner)	Post-Approval
Caldita 3D Marine Seismic Survey - NT/P61, NT/P69, and acreage release area NT06-5	2006/3142	Not Controlled Action (Particular Manner)	Post-Approval
Dredging the outer shipping channels of Darwin Harbour	2013/6988	Not Controlled Action (Particular Manner)	Post-Approval
Eni Bathurst 3D Seismic Survey	2011/6118	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling in Permit Areas WA-402-P & WA-403-P	2010/5297	Not Controlled Action (Particular Manner)	Post-Approval
Joseph Bonaparte Gulf Seabed mapping survey	2010/5517	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Malita West 3D Seismic Survey WA-402-P and WA-403-P	2007/3936	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey 2012	2012/6310	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval
NT/P74 & NT/P75 - 2D marine seismic survey	2008/4316	Not Controlled Action (Particular Manner)	Post-Approval
NT/P77 3D Marine Seismic Survey	2009/4683	Not Controlled Action (Particular Manner)	Post-Approval
NT/P80 2010 2D Marine Seismic Survey	2010/5487	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Panda NT/P76 3D Seismic Acquisition Survey Program	2009/4992	Not Controlled Action (Particular Manner)	Post-Approval
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval
Removal of Potential Unexploded Ordnance within NAXA	2012/6503	Not Controlled Action (Particular Manner)	Post-Approval
Santos Petrel-7 Offshore Appraisal Drilling Programme (Bonaparte Basin)	2011/5934	Not Controlled Action (Particular Manner)	Post-Approval
Sonar and Acoustic Trials	2001/345	Not Controlled Action (Particular Manner)	Post-Approval
Sunshine Infill 2D and Mimosa 2D Marine Seismic Surveys	2009/4699	Not Controlled Action (Particular Manner)	Post-Approval
Two dimensional (2d) seismic survey in Gulf of Carpentaria	2013/6991	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
3D Seismic Survey (NT/P68)	2006/2949	Referral Decision	Completed
Capital Dredging Weipa South Channel	2003/1302	Referral Decision	Completed
Groote Eylandt Offshore Marine Surveys	2010/5643	Referral Decision	Completed
Nova 3D Seismic Survey, WA 442-NT/P81, Joseph Bonaparte Gulf	2013/6820	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Carbonate bank and terrace system of the Sahul Shelf	North-west
Carbonate bank and terrace system of the Van Diemen Rise	North
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North
Pinnacles of the Bonaparte Basin	North-west
Pinnacles of the Bonaparte Basin	North
Plateaux and saddle north-west of the Wellesley Islands	North
Shelf break and slope of the Arafura Shelf	North
Submerged coral reefs of the Gulf of Carpentaria	North
Tributary Canyons of the Arafura Depression	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Dermochelys coriacea Leatherback Turtle [1768]	Internesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		

Scientific Name	Behaviour	Presence
Anous stolidus Common Noddy [825]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Foraging	Likely to occur
Onychoprion anaethetus Bridled Tern [82845]	Breeding	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Breeding (high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding (high numbers)	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Thalasseus bergii Crested Tern [83000]	Breeding	Known to occur
Thalasseus bergii Crested Tern [83000]	Breeding (high numbers)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 10-Jun-2024

Figure 1: SWMR PMST sub area 1 (labelled '2')

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	3
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	141
Listed Migratory Species:	84

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	240
Commonwealth Heritage Places:	4
Listed Marine Species:	123
Whales and Other Cetaceans:	39
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	63
Regional Forest Agreements:	1
Nationally Important Wetlands:	5
EPBC Act Referrals:	131
Key Ecological Features (Marine):	11
Biologically Important Areas:	33
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Australian Convict Sites (Fremantle Prison)	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
Fremantle Prison (former)	WA	Listed place
Indigenous		
Cheetup Rock Shelter	WA	Listed place
Natural		
Fitzgerald River National Park	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Becher point wetlands	Within Ramsar site
Forrestdale and thomsons lakes	Within 10km of Ramsar site
Lake gore	Within Ramsar site
Lake warden system	Within 10km of Ramsar site
Peel-yalgorup system	Within Ramsar site
Vasse-wonnerup system	Within Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area
CRUSTACEAN		
Engaewa pseudoreducta		
Margaret River Burrowing Crayfish [82674]	Critically Endangered	Species or species habitat may occur within area
Engaewa reducta		
Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat may occur within area
FISH		
Galaxias truttaceus (Western Australian population)		
Western Trout Minnow [89857]	Endangered	Species or species habitat known to occur within area
Galaxiella nigrostriata		
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat known to occur within area
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannatherina balstoni		
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area
INSECT		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
Trioza barrettae		
Banksia brownii plant louse [87805]	Endangered	Species or species habitat known to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Translocated population known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Adenanthos dobagii Fitzgerald Woollybush [21253]	Endangered	Species or species habitat likely to occur within area
Adenanthos ellipticus Oval-leaf Adenanthos [4570]	Vulnerable	Species or species habitat likely to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Andersonia pinaster Two Peoples Bay Andersonia [67444]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat likely to occur within area
Banksia verticillata Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat known to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat may occur within area
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat may occur within area
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat likely to occur within area
Caladenia caesarea subsp. maritima Cape Spider-orchid [64856]	Endangered	Species or species habitat known to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia harringtoniae		
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat may occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Caladenia lodgeana		
Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia procera		
Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat known to occur within area
Caladenia viridescens		
Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known to occur within area
Calectasia cyanea		
Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat likely to occur within area
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6)		
Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat likely to occur within area
Chamelaucium sp. S coastal plain (R.D.Royce 4872)		
Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
Chordifex abortivus		
Manypeaks Rush [64868]	Endangered	Species or species habitat likely to occur within area
Commersonia apella		
Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat known to occur within area
Coopernookia georgei		
Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat likely to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Grevillea infundibularis Fan-leaf Grevillea [5772]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat known to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Stylidium galioides Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area
Verticordia crebra [55678]	Vulnerable	Species or species habitat likely to occur within area
Verticordia densiflora var. pedunculata Long-stalked Featherflower [55689]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. vassensis Vasse Featherflower [55804]	Endangered	Species or species habitat may occur within area
Wurmbea calcicola Naturaliste Nancy [64691]	Endangered	Species or species habitat known to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Physeter macrocephalus](#) Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - ARTILLERY BARRACKS - FREMANTLE [50155]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50183]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50184]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50186]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50185]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50181]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50187]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50182]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50117]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50133]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50134]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50132]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50131]	WA
Defence - ROCKINGHAM - NAVY CPSO [50135]	WA
Defence - SWANBOURNE RIFLE RANGE [50188]	WA

Commonwealth Land Name	State
Defence - SWANBOURNE RIFLE RANGE [50191]	WA
Unknown	
Commonwealth Land - [50504]	WA
Commonwealth Land - [50503]	WA
Commonwealth Land - [50507]	WA
Commonwealth Land - [50506]	WA
Commonwealth Land - [50495]	WA
Commonwealth Land - [50505]	WA
Commonwealth Land - [50425]	WA
Commonwealth Land - [50473]	WA
Commonwealth Land - [50424]	WA
Commonwealth Land - [50493]	WA
Commonwealth Land - [50567]	WA
Commonwealth Land - [50633]	WA
Commonwealth Land - [50566]	WA
Commonwealth Land - [50483]	WA
Commonwealth Land - [50467]	WA
Commonwealth Land - [50487]	WA
Commonwealth Land - [50551]	WA
Commonwealth Land - [50558]	WA
Commonwealth Land - [50431]	WA
Commonwealth Land - [50550]	WA
Commonwealth Land - [50518]	WA
Commonwealth Land - [50437]	WA
Commonwealth Land - [50422]	WA
Commonwealth Land - [51437]	WA
Commonwealth Land - [50579]	WA

Commonwealth Land Name	State
Commonwealth Land - [50631]	WA
Commonwealth Land - [51480]	WA
Commonwealth Land - [50470]	WA
Commonwealth Land - [51436]	WA
Commonwealth Land - [50478]	WA
Commonwealth Land - [50510]	WA
Commonwealth Land - [50511]	WA
Commonwealth Land - [50605]	WA
Commonwealth Land - [50516]	WA
Commonwealth Land - [50638]	WA
Commonwealth Land - [50412]	WA
Commonwealth Land - [50517]	WA
Commonwealth Land - [50496]	WA
Commonwealth Land - [50501]	WA
Commonwealth Land - [50498]	WA
Commonwealth Land - [50419]	WA
Commonwealth Land - [50418]	WA
Commonwealth Land - [50629]	WA
Commonwealth Land - [50624]	WA
Commonwealth Land - [50608]	WA
Commonwealth Land - [50573]	WA
Commonwealth Land - [50628]	WA
Commonwealth Land - [50485]	WA
Commonwealth Land - [51889]	WA
Commonwealth Land - [50446]	WA
Commonwealth Land - [50500]	WA
Commonwealth Land - [50486]	WA

Commonwealth Land Name	State
Commonwealth Land - [50475]	WA
Commonwealth Land - [50456]	WA
Commonwealth Land - [50457]	WA
Commonwealth Land - [52281]	WA
Commonwealth Land - [50455]	WA
Commonwealth Land - [50522]	WA
Commonwealth Land - [50529]	WA
Commonwealth Land - [50527]	WA
Commonwealth Land - [50525]	WA
Commonwealth Land - [50571]	WA
Commonwealth Land - [50570]	WA
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Commonwealth Land Name	State
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Commonwealth Land Name	State
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Commonwealth Land - [50468]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Artillery Barracks	WA	Listed place
Cliff Point Historic Site	WA	Listed place
J Gun Battery	WA	Listed place
Natural		
Garden Island	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis		
Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena		
Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Eudyptula minor		
Little Penguin [1085]		Breeding known to occur within area
Gallinago megala		
Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura		
Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile		
Aipysurus pooleorum		
Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Hydrophis kingii as Disteira kingii		
Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Berardius arnuxii](#) Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Geographe	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
South-west Corner	Habitat Protection Zone (IUCN IV)
Geographe	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Geographe	National Park Zone (IUCN II)

Park Name	Zone & IUCN Categories
Perth Canyon	National Park Zone (IUCN II)
Perth Canyon	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Geographe	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Arpenteur	Nature Reserve	WA
Bald Island	Nature Reserve	WA
Bold Park	Botanic Gardens	WA
Broadwater	Nature Reserve	WA
Cape Le Grand	National Park	WA

Protected Area Name	Reserve Type	State
Carnac Island	Nature Reserve	WA
Cottesloe Reef	Fish Habitat Protection Area	WA
D'Entrecasteaux	National Park	WA
Doubtful Islands	Nature Reserve	WA
Eclipse Island	Nature Reserve	WA
Fitzgerald River	National Park	WA
Flinders Bay	Nature Reserve	WA
Hamelin Island	Nature Reserve	WA
Investigator Island	Nature Reserve	WA
Jerdacuttup Lakes	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Locke	Nature Reserve	WA
Marmion	Marine Park	WA
Mount Manypeaks	Nature Reserve	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0085A)	Conservation Covenant	WA
NTWA Bushland covenant (0085B)	Conservation Covenant	WA
NTWA Bushland covenant (0173)	Conservation Covenant	WA
NTWA Bushland covenant (0178)	Conservation Covenant	WA
Penguin Island	Conservation Park	WA
Port Kennedy Scientific Park	Nature Reserve	WA
Quagering	Nature Reserve	WA
Quarram	Nature Reserve	WA
Recherche Archipelago	Nature Reserve	WA
Rottnest Island	State Reserve	WA
Shoalwater Bay Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Shoalwater Islands	Marine Park	WA
St Alouarn Island	Nature Reserve	WA
Stokes	National Park	WA
Sugar Loaf Rock	Nature Reserve	WA
Swan River	Management Area	WA
Torndirrup	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA25836	Nature Reserve	WA
Unnamed WA26620	Nature Reserve	WA
Unnamed WA26885	Nature Reserve	WA
Unnamed WA27888	Nature Reserve	WA
Unnamed WA32478	5(1)(h) Reserve	WA
Unnamed WA41568	Nature Reserve	WA
Unnamed WA41597	Nature Reserve	WA
Unnamed WA42379	5(1)(h) Reserve	WA
Unnamed WA42469	Nature Reserve	WA
Unnamed WA42879	Nature Reserve	WA
Unnamed WA43903	Nature Reserve	WA
Unnamed WA44004	Nature Reserve	WA
Unnamed WA44676	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44709	5(1)(h) Reserve	WA
Unnamed WA48837	Nature Reserve	WA
Unnamed WA48955	5(1)(h) Reserve	WA
Unnamed WA48968	5(1)(h) Reserve	WA
Unnamed WA49220	Conservation Park	WA
Unnamed WA49385	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA50017	Nature Reserve	WA
Walpole-Nornalup	National Park	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	WA
Yalgorup	National Park	WA

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
South West WA RFA	Western Australia

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Becher Point Wetlands	WA
Doggerup Creek System	WA
Rottnest Island Lakes	WA
Swan-Canning Estuary	WA
Vasse-Wonnerup Wetland System	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Fremantle District Police Complex Project	2022/09345		Completed
H2Perth hydrogen and ammonia project	2023/09559		Completed
Installation of additional potable water tank	2023/09518		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
WA Offshore Windfarm	2021/8961		Completed
Controlled action			
Aerial Application of Lavicide to Vasse-Wonnerup Wetlands	2010/5593	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Airborne sonar trials	2001/540	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
All weather access track road between Windy Harbour and Nelson Location 7965	2011/6121	Controlled Action	Post-Approval
Busselton Foreshore Redevelopment from West Street to Ford Road	2013/6830	Controlled Action	Post-Approval
Cape View Resort at Lot 190 Little Colin Street	2006/3070	Controlled Action	Post-Approval
Construction of a Deepwater, General Container Port	2009/5178	Controlled Action	Proposed Decision
Construction of New Perth Bunbury Highway project	2005/2193	Controlled Action	Post-Approval
Dawson Beach Estate Stage 2	2005/2153	Controlled Action	Post-Approval
Development Guide Plan for 46 ha Residential Subdivision	2008/4102	Controlled Action	Post-Approval
Development of Busselton Health Campus	2011/6011	Controlled Action	Post-Approval
Development of Kwinana Quay port facility	2008/4387	Controlled Action	Completed
Develop Trails and a Wetlands Demonstration Site and Centre	2008/4439	Controlled Action	Post-Approval
Eastern Link Project, Busselton WA	2018/8155	Controlled Action	Post-Approval
Industry Zone	2010/5337	Controlled Action	Post-Approval
Lennox Weir Removal, 12kms west Busselton	2021/8915	Controlled Action	Assessment Approach
Lower Vasse River Sediment Removal	2021/9051	Controlled Action	Post-Approval
Mangles Bay Marina Based Tourist Precinct	2010/5659	Controlled Action	Post-Approval
Neighbourhood Shopping Centre and Mixed Business Centre, Ocean Road, Dawesville	2006/3155	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Old Broadwater Farm Estate Subdivision - Stage 3	2009/5231	Controlled Action	Post-Approval
Peel's Retreat Estate - Residential development	2006/3063	Controlled Action	Post-Approval
Peppermint Park Residential Subdivision - Stage 5	2008/4028	Controlled Action	Post-Approval
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval
Ravensthorpe Nickel Project	2001/172	Controlled Action	Post-Approval
Residential Development, Lot 3 & 4 Dorsett Street	2006/2774	Controlled Action	Completed
Residential development Lot 3, 500 Bussell Highway, WA	2013/7098	Controlled Action	Post-Approval
Residential development Lots 8 & 9 King Street	2006/2787	Controlled Action	Completed
retirement units & aged care facility development	2007/3533	Controlled Action	Post-Approval
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed
Shenton Park Subdivision	2004/1479	Controlled Action	Completed
Smiths Beach Project, Yallingup - Coastal Tourism Village	2021/9141	Controlled Action	Referral Publication
Southern Bluefin Tuna Farm	2005/2165	Controlled Action	Completed
Subdivision Lot 1 Dawesville Rd	2005/2394	Controlled Action	Post-Approval
Three Turning Pockets West of Busselton Townsite	2002/846	Controlled Action	Post-Approval
Tourism Villa Facility Development	2008/4025	Controlled Action	Post-Approval
tourist and residential development	2007/3483	Controlled Action	Post-Approval
Upgrade of Ford Road	2005/2113	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval
Not controlled action			
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed
25 Lot Residential Subdivision	2009/4830	Not Controlled Action	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674	Not Controlled Action	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835	Not Controlled Action	Completed
Cape Naturaliste Road Shared Pathway, Dunsborough, WA	2018/8282	Not Controlled Action	Completed
Causeway Bridge Duplication, Busselton, WA	2018/8309	Not Controlled Action	Completed
Caves Road widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475	Not Controlled Action	Completed
Clear Lot 503, 54 Ocean Road Dawesville, WA	2014/7375	Not Controlled Action	Completed
Construction and operation of an 8 turbine wind farm at Rous Head Harbour, Frema	2003/933	Not Controlled Action	Completed
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eastport canal estate development stage 5	2007/3737	Not Controlled Action	Completed
Establishment of a National Lifestyle Village	2011/6081	Not Controlled Action	Completed
Expansion of berthing facilities at Kwinana Bulk Terminal	2006/2509	Not Controlled Action	Completed
Expansion of existing Ammonium Nitrate Production Facility	2005/1941	Not Controlled Action	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891	Not Controlled Action	Completed
Florida Estate Residential Subdivision Development Stage 13	2011/6045	Not Controlled Action	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462	Not Controlled Action	Completed
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477	Not Controlled Action	Completed
Gas-fired Power Station	2005/2213	Not Controlled Action	Completed
Geo-science Investigations	2005/2069	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Kennedy Bay urban development, Port Kennedy, WA	2014/7122	Not Controlled Action	Completed
Kennedy Park Estate Residential Development	2003/1044	Not Controlled Action	Completed
Kwinana Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed
Limestone quarry expansion	2005/2268	Not Controlled Action	Completed
Limestone Quarry Expansion, Lots 3618 and 1794, Finn Road	2005/2332	Not Controlled Action	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Oman Australia Cable Installation, WA	2021/8922	Not Controlled Action	Completed
Oman Australia Cable - Marine Route Survey	2020/8731	Not Controlled Action	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853	Not Controlled Action	Completed
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	Not Controlled Action	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932	Not Controlled Action	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195	Not Controlled Action	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248	Not Controlled Action	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288	Not Controlled Action	Completed
Warders' Cottages Block 2 'W2'	2022/9148	Not Controlled Action	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185	Not Controlled Action	Completed
Wind Farm development	2005/2105	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952	Not Controlled Action (Particular Manner)	Post-Approval
Ambergate North Residential Development	2009/4802	Not Controlled Action (Particular Manner)	Post-Approval
Arcadia Petroleum - BR12 3D Marine Seismic Survey	2012/6476	Not Controlled Action (Particular Manner)	Post-Approval
Australian Underwater Discovery Centre	2021/9019	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Bremer Basin 2D Marine Seismic Survey, WA	2009/5013	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Garden Island Project, offshore WA	2016/7635	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Geophysical and Geotechnical Surveys	2014/7408	Not Controlled Action (Particular Manner)	Post-Approval
City of Cockburn Sporting Facilties	2005/2139	Not Controlled Action (Particular Manner)	Post-Approval
Construction of urea production plant and supporting infrastructure	2009/5067	Not Controlled Action (Particular Manner)	Post-Approval
Coodanup residential development	2006/3073	Not Controlled Action (Particular Manner)	Post-Approval
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Lake Richmond Boardwalk installation, Rockingham, WA	2013/6977	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
Monaghan's Roundabout Project - Intersection of Bussell Highway and Caves Road, Shire of Busselton	2007/3515	Not Controlled Action (Particular Manner)	Post-Approval
Multipurpose development stage 1 within 340ha	2004/1913	Not Controlled Action (Particular Manner)	Post-Approval
Novacare Lifestyle Village	2001/311	Not Controlled Action (Particular Manner)	Post-Approval
Road upgrades and walk trail development	2009/4958	Not Controlled Action (Particular Manner)	Post-Approval
South Busselton Primary School	2001/290	Not Controlled Action (Particular Manner)	Post-Approval
South West Metropolitan Railway Project	2003/1175	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Subdivision and development of residential dwelling on part Lot 1, Bussell Highw	2006/3023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic survey	2007/3725	Referral Decision	Completed
3D Seismic Survey	2012/6245	Referral Decision	Completed
Ambergate North Residential Community (4896 lots)	2008/4617	Referral Decision	Completed
CO2 3D Seismic Survey Vlaming Sub-Basin	2012/6343	Referral Decision	Completed
Grand Southern Margin 2D Marine Seismic Survey	2008/4573	Referral Decision	Completed
Kennedy Bay Urban Development,PortKennedy,Rockingh	2013/7022	Referral Decision	Completed
Lots 1-5 Bluerise Cove & Lots 801 & 124 Pleasant Grove Rezoning and Subdivision	2008/4295	Referral Decision	Completed
Narelle 3D Marine Seismic Survey	2008/4575	Referral Decision	Completed
Residential Subdivision Lot 801 Pleasant Grove Circle, Falcon, WA	2012/6507	Referral Decision	Referral Publication
Riverbank and Country Road Estates Lot 43 Bussell Highway	2005/2367	Referral Decision	Completed
Sonar Trials and Acoustic Trials	2001/538	Referral Decision	Completed
Water quality improvement trial, Lower Vasse River, Busselton, WA	2013/6975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Albany Canyons group and adjacent shelf break	South-west
Ancient coastline at 90-120m depth	South-west
Cape Mentelle upwelling	South-west

Name	Region
Commonwealth marine environment surrounding the Recherche Archipelago	South-west
Commonwealth marine environment within and adjacent to Geographe Bay	South-west
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Perth Canyon and adjacent shelf break, and other west coast canyons	South-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes Flesh-footed Shearwater [82404]	Aggregation	Known to occur
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging (in high numbers)	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range

Scientific Name	Behaviour	Presence
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high numbers)	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging (provisioning young)	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur

Scientific Name	Behaviour	Presence
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Known to occur
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (abundant food source)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (high density)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (on migration)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging Area (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (south)	Known to occur
Physeter macrocephalus		
Sperm Whale [59]	Foraging (abundant food source)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 10-Jun-2024

Figure 1: SWMR sub area 2 (labelled '3' and '4)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	3
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	141
Listed Migratory Species:	84

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	240
Commonwealth Heritage Places:	4
Listed Marine Species:	123
Whales and Other Cetaceans:	39
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	63
Regional Forest Agreements:	1
Nationally Important Wetlands:	5
EPBC Act Referrals:	131
Key Ecological Features (Marine):	11
Biologically Important Areas:	33
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Australian Convict Sites (Fremantle Prison)	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
Fremantle Prison (former)	WA	Listed place
Indigenous		
Cheetup Rock Shelter	WA	Listed place
Natural		
Fitzgerald River National Park	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Becher point wetlands	Within Ramsar site
Forrestdale and thomsons lakes	Within 10km of Ramsar site
Lake gore	Within Ramsar site
Lake warden system	Within 10km of Ramsar site
Peel-yalgorup system	Within Ramsar site
Vasse-wonnerup system	Within Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area
CRUSTACEAN		
Engaewa pseudoreducta		
Margaret River Burrowing Crayfish [82674]	Critically Endangered	Species or species habitat may occur within area
Engaewa reducta		
Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat may occur within area
FISH		
Galaxias truttaceus (Western Australian population)		
Western Trout Minnow [89857]	Endangered	Species or species habitat known to occur within area
Galaxiella nigrostriata		
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat known to occur within area
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannatherina balstoni		
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area
INSECT		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
Trioza barrettae		
Banksia brownii plant louse [87805]	Endangered	Species or species habitat known to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Translocated population known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Adenanthos dobagii Fitzgerald Woollybush [21253]	Endangered	Species or species habitat likely to occur within area
Adenanthos ellipticus Oval-leaf Adenanthos [4570]	Vulnerable	Species or species habitat likely to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Andersonia pinaster Two Peoples Bay Andersonia [67444]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat known to occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat likely to occur within area
Banksia verticillata Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat known to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat may occur within area
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat may occur within area
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat likely to occur within area
Caladenia caesarea subsp. maritima Cape Spider-orchid [64856]	Endangered	Species or species habitat known to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia harringtoniae		
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat may occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Caladenia lodgeana		
Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia procera		
Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat known to occur within area
Caladenia viridescens		
Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known to occur within area
Calectasia cyanea		
Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat likely to occur within area
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6)		
Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat likely to occur within area
Chamelaucium sp. S coastal plain (R.D.Royce 4872)		
Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
Chordifex abortivus		
Manypeaks Rush [64868]	Endangered	Species or species habitat likely to occur within area
Commersonia apella		
Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat known to occur within area
Coopernookia georgei		
Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat likely to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat known to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Grevillea infundibularis Fan-leaf Grevillea [5772]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat known to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat may occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
Sphenotoma drummondii Mountain Paper-heath [21160]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Stylidium galioides Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area
Verticordia crebra [55678]	Vulnerable	Species or species habitat likely to occur within area
Verticordia densiflora var. pedunculata Long-stalked Featherflower [55689]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. vassensis Vasse Featherflower [55804]	Endangered	Species or species habitat may occur within area
Wurmbea calcicola Naturaliste Nancy [64691]	Endangered	Species or species habitat known to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Physeter macrocephalus](#) Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - ARTILLERY BARRACKS - FREMANTLE [50155]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50183]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50185]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50184]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50186]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50181]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50187]	WA
Defence - CAMPBELL BARRACKS - SWANBOURNE [50182]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50117]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50134]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50133]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50131]	WA
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND [50132]	WA
Defence - ROCKINGHAM - NAVY CPSO [50135]	WA
Defence - SWANBOURNE RIFLE RANGE [50188]	WA

Commonwealth Land Name	State
Defence - SWANBOURNE RIFLE RANGE [50191]	WA
Unknown	
Commonwealth Land - [50495]	WA
Commonwealth Land - [50505]	WA
Commonwealth Land - [50424]	WA
Commonwealth Land - [50493]	WA
Commonwealth Land - [50507]	WA
Commonwealth Land - [50506]	WA
Commonwealth Land - [50487]	WA
Commonwealth Land - [50483]	WA
Commonwealth Land - [50425]	WA
Commonwealth Land - [50473]	WA
Commonwealth Land - [50564]	WA
Commonwealth Land - [50566]	WA
Commonwealth Land - [50567]	WA
Commonwealth Land - [50467]	WA
Commonwealth Land - [50551]	WA
Commonwealth Land - [50558]	WA
Commonwealth Land - [50431]	WA
Commonwealth Land - [50550]	WA
Commonwealth Land - [50633]	WA
Commonwealth Land - [50437]	WA
Commonwealth Land - [50422]	WA
Commonwealth Land - [50518]	WA
Commonwealth Land - [51105]	WA
Commonwealth Land - [50605]	WA
Commonwealth Land - [51437]	WA

Commonwealth Land Name	State
Commonwealth Land - [50579]	WA
Commonwealth Land - [50631]	WA
Commonwealth Land - [50638]	WA
Commonwealth Land - [50517]	WA
Commonwealth Land - [50470]	WA
Commonwealth Land - [50478]	WA
Commonwealth Land - [50510]	WA
Commonwealth Land - [50511]	WA
Commonwealth Land - [50412]	WA
Commonwealth Land - [50501]	WA
Commonwealth Land - [50498]	WA
Commonwealth Land - [50416]	WA
Commonwealth Land - [50504]	WA
Commonwealth Land - [50419]	WA
Commonwealth Land - [50418]	WA
Commonwealth Land - [50503]	WA
Commonwealth Land - [50496]	WA
Commonwealth Land - [50628]	WA
Commonwealth Land - [50629]	WA
Commonwealth Land - [50573]	WA
Commonwealth Land - [50446]	WA
Commonwealth Land - [50485]	WA
Commonwealth Land - [50608]	WA
Commonwealth Land - [50600]	WA
Commonwealth Land - [51889]	WA
Commonwealth Land - [50500]	WA
Commonwealth Land - [50486]	WA

Commonwealth Land Name	State
Commonwealth Land - [50475]	WA
Commonwealth Land - [50456]	WA
Commonwealth Land - [50457]	WA
Commonwealth Land - [52281]	WA
Commonwealth Land - [50455]	WA
Commonwealth Land - [50529]	WA
Commonwealth Land - [50471]	WA
Commonwealth Land - [50525]	WA
Commonwealth Land - [50522]	WA
Commonwealth Land - [50570]	WA
Commonwealth Land - [50527]	WA
Commonwealth Land - [51890]	WA
Commonwealth Land - [50571]	WA
Commonwealth Land - [50492]	WA
Commonwealth Land - [50452]	WA
Commonwealth Land - [50624]	WA
Commonwealth Land - [50621]	WA
Commonwealth Land - [50620]	WA
Commonwealth Land - [50623]	WA
Commonwealth Land - [50622]	WA
Commonwealth Land - [50450]	WA
Commonwealth Land - [50451]	WA
Commonwealth Land - [50454]	WA
Commonwealth Land - [50458]	WA
Commonwealth Land - [50639]	WA
Commonwealth Land - [50632]	WA
Commonwealth Land - [50463]	WA

Commonwealth Land Name	State
Commonwealth Land - [50589]	WA
Commonwealth Land - [51480]	WA
Commonwealth Land - [50634]	WA
Commonwealth Land - [50635]	WA
Commonwealth Land - [50466]	WA
Commonwealth Land - [50464]	WA
Commonwealth Land - [51487]	WA
Commonwealth Land - [50557]	WA
Commonwealth Land - [50569]	WA
Commonwealth Land - [50401]	WA
Commonwealth Land - [50539]	WA
Commonwealth Land - [50538]	WA
Commonwealth Land - [50531]	WA
Commonwealth Land - [50530]	WA
Commonwealth Land - [50533]	WA
Commonwealth Land - [50415]	WA
Commonwealth Land - [52119]	WA
Commonwealth Land - [50438]	WA
Commonwealth Land - [50613]	WA
Commonwealth Land - [50389]	WA
Commonwealth Land - [50442]	WA
Commonwealth Land - [50443]	WA
Commonwealth Land - [50441]	WA
Commonwealth Land - [50447]	WA
Commonwealth Land - [52200]	WA
Commonwealth Land - [50484]	WA
Commonwealth Land - [50523]	WA

Commonwealth Land Name	State
Commonwealth Land - [50387]	WA
Commonwealth Land - [51987]	WA
Commonwealth Land - [50388]	WA
Commonwealth Land - [50434]	WA
Commonwealth Land - [50449]	WA
Commonwealth Land - [50536]	WA
Commonwealth Land - [50433]	WA
Commonwealth Land - [50432]	WA
Commonwealth Land - [50580]	WA
Commonwealth Land - [50581]	WA
Commonwealth Land - [50617]	WA
Commonwealth Land - [50526]	WA
Commonwealth Land - [50465]	WA
Commonwealth Land - [51411]	WA
Commonwealth Land - [51117]	WA
Commonwealth Land - [50524]	WA
Commonwealth Land - [52242]	WA
Commonwealth Land - [51895]	WA
Commonwealth Land - [50565]	WA
Commonwealth Land - [50404]	WA
Commonwealth Land - [50619]	WA
Commonwealth Land - [50618]	WA
Commonwealth Land - [50611]	WA
Commonwealth Land - [50610]	WA
Commonwealth Land - [50614]	WA
Commonwealth Land - [50612]	WA
Commonwealth Land - [50616]	WA

Commonwealth Land Name	State
Commonwealth Land - [50615]	WA
Commonwealth Land - [50453]	WA
Commonwealth Land - [50568]	WA
Commonwealth Land - [51891]	WA
Commonwealth Land - [51894]	WA
Commonwealth Land - [51892]	WA
Commonwealth Land - [51893]	WA
Commonwealth Land - [50535]	WA
Commonwealth Land - [50532]	WA
Commonwealth Land - [50537]	WA
Commonwealth Land - [50534]	WA
Commonwealth Land - [50509]	WA
Commonwealth Land - [52279]	WA
Commonwealth Land - [50627]	WA
Commonwealth Land - [50497]	WA
Commonwealth Land - [50637]	WA
Commonwealth Land - [50459]	WA
Commonwealth Land - [50476]	WA
Commonwealth Land - [50474]	WA
Commonwealth Land - [50578]	WA
Commonwealth Land - [50477]	WA
Commonwealth Land - [50577]	WA
Commonwealth Land - [50572]	WA
Commonwealth Land - [50479]	WA
Commonwealth Land - [50591]	WA
Commonwealth Land - [50590]	WA
Commonwealth Land - [50604]	WA

Commonwealth Land Name	State
Commonwealth Land - [50599]	WA
Commonwealth Land - [50603]	WA
Commonwealth Land - [50601]	WA
Commonwealth Land - [50472]	WA
Commonwealth Land - [50491]	WA
Commonwealth Land - [50597]	WA
Commonwealth Land - [50595]	WA
Commonwealth Land - [50512]	WA
Commonwealth Land - [50462]	WA
Commonwealth Land - [50516]	WA
Commonwealth Land - [50520]	WA
Commonwealth Land - [50481]	WA
Commonwealth Land - [50480]	WA
Commonwealth Land - [50488]	WA
Commonwealth Land - [50482]	WA
Commonwealth Land - [50423]	WA
Commonwealth Land - [50390]	WA
Commonwealth Land - [50427]	WA
Commonwealth Land - [50521]	WA
Commonwealth Land - [50444]	WA
Commonwealth Land - [50428]	WA
Commonwealth Land - [50641]	WA
Commonwealth Land - [50640]	WA
Commonwealth Land - [52199]	WA
Commonwealth Land - [50421]	WA
Commonwealth Land - [50609]	WA
Commonwealth Land - [50420]	WA

Commonwealth Land Name	State
Commonwealth Land - [50499]	WA
Commonwealth Land - [50514]	WA
Commonwealth Land - [50490]	WA
Commonwealth Land - [50548]	WA
Commonwealth Land - [50549]	WA
Commonwealth Land - [50544]	WA
Commonwealth Land - [50545]	WA
Commonwealth Land - [50546]	WA
Commonwealth Land - [51974]	WA
Commonwealth Land - [50528]	WA
Commonwealth Land - [51116]	WA
Commonwealth Land - [51115]	WA
Commonwealth Land - [50468]	WA
Commonwealth Land - [51436]	WA
Commonwealth Land - [50602]	WA
Commonwealth Land - [51113]	WA
Commonwealth Land - [50552]	WA
Commonwealth Land - [51119]	WA
Commonwealth Land - [50543]	WA
Commonwealth Land - [50542]	WA
Commonwealth Land - [50417]	WA
Commonwealth Land - [50596]	WA
Commonwealth Land - [50555]	WA
Commonwealth Land - [50556]	WA
Commonwealth Land - [50554]	WA
Commonwealth Land - [50547]	WA
Commonwealth Land - [50540]	WA

Commonwealth Land Name	State
Commonwealth Land - [50541]	WA
Commonwealth Land - [50469]	WA
Commonwealth Land - [51488]	WA
Commonwealth Land - [50636]	WA
Commonwealth Land - [50445]	WA
Commonwealth Land - [50460]	WA
Commonwealth Land - [50513]	WA
Commonwealth Land - [50515]	WA
Commonwealth Land - [50519]	WA
Commonwealth Land - [50461]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Artillery Barracks	WA	Listed place
Cliff Point Historic Site	WA	Listed place
J Gun Battery	WA	Listed place
Natural		
Garden Island	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis		
Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena		
Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Eudyptula minor		
Little Penguin [1085]		Breeding known to occur within area
Gallinago megala		
Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura		
Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus dominicanus Kelp Gull [809]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile		
Aipysurus pooleorum		
Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Hydrophis kingii as Disteira kingii		
Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Berardius arnuxii](#) Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Geographe	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
South-west Corner	Habitat Protection Zone (IUCN IV)
Geographe	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Geographe	National Park Zone (IUCN II)

Park Name	Zone & IUCN Categories
Perth Canyon	National Park Zone (IUCN II)
Perth Canyon	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Geographe	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Arpenteur	Nature Reserve	WA
Bald Island	Nature Reserve	WA
Bold Park	Botanic Gardens	WA
Broadwater	Nature Reserve	WA
Cape Le Grand	National Park	WA

Protected Area Name	Reserve Type	State
Carnac Island	Nature Reserve	WA
Cottesloe Reef	Fish Habitat Protection Area	WA
D'Entrecasteaux	National Park	WA
Doubtful Islands	Nature Reserve	WA
Eclipse Island	Nature Reserve	WA
Fitzgerald River	National Park	WA
Flinders Bay	Nature Reserve	WA
Hamelin Island	Nature Reserve	WA
Investigator Island	Nature Reserve	WA
Jerdacuttup Lakes	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Locke	Nature Reserve	WA
Marmion	Marine Park	WA
Mount Manypeaks	Nature Reserve	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0085A)	Conservation Covenant	WA
NTWA Bushland covenant (0085B)	Conservation Covenant	WA
NTWA Bushland covenant (0173)	Conservation Covenant	WA
NTWA Bushland covenant (0178)	Conservation Covenant	WA
Penguin Island	Conservation Park	WA
Port Kennedy Scientific Park	Nature Reserve	WA
Quagering	Nature Reserve	WA
Quarram	Nature Reserve	WA
Recherche Archipelago	Nature Reserve	WA
Rottnest Island	State Reserve	WA
Shoalwater Bay Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Shoalwater Islands	Marine Park	WA
St Alouarn Island	Nature Reserve	WA
Stokes	National Park	WA
Sugar Loaf Rock	Nature Reserve	WA
Swan River	Management Area	WA
Torndirrup	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA25836	Nature Reserve	WA
Unnamed WA26620	Nature Reserve	WA
Unnamed WA26885	Nature Reserve	WA
Unnamed WA27888	Nature Reserve	WA
Unnamed WA32478	5(1)(h) Reserve	WA
Unnamed WA41568	Nature Reserve	WA
Unnamed WA41597	Nature Reserve	WA
Unnamed WA42379	5(1)(h) Reserve	WA
Unnamed WA42469	Nature Reserve	WA
Unnamed WA42879	Nature Reserve	WA
Unnamed WA43903	Nature Reserve	WA
Unnamed WA44004	Nature Reserve	WA
Unnamed WA44676	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44709	5(1)(h) Reserve	WA
Unnamed WA48837	Nature Reserve	WA
Unnamed WA48955	5(1)(h) Reserve	WA
Unnamed WA48968	5(1)(h) Reserve	WA
Unnamed WA49220	Conservation Park	WA
Unnamed WA49385	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA50017	Nature Reserve	WA
Walpole-Nornalup	National Park	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	WA
Yalgorup	National Park	WA

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
South West WA RFA	Western Australia

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Becher Point Wetlands	WA
Doggerup Creek System	WA
Rottnest Island Lakes	WA
Swan-Canning Estuary	WA
Vasse-Wonnerup Wetland System	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Fremantle District Police Complex Project	2022/09345		Completed
H2Perth hydrogen and ammonia project	2023/09559		Completed
Installation of additional potable water tank	2023/09518		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Referral Decision
WA Offshore Windfarm	2021/8961		Completed
Controlled action			
Aerial Application of Lavicide to Vasse-Wonnerup Wetlands	2010/5593	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Airborne sonar trials	2001/540	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
All weather access track road between Windy Harbour and Nelson Location 7965	2011/6121	Controlled Action	Post-Approval
Busselton Foreshore Redevelopment from West Street to Ford Road	2013/6830	Controlled Action	Post-Approval
Cape View Resort at Lot 190 Little Colin Street	2006/3070	Controlled Action	Post-Approval
Construction of a Deepwater, General Container Port	2009/5178	Controlled Action	Proposed Decision
Construction of New Perth Bunbury Highway project	2005/2193	Controlled Action	Post-Approval
Dawson Beach Estate Stage 2	2005/2153	Controlled Action	Post-Approval
Development Guide Plan for 46 ha Residential Subdivision	2008/4102	Controlled Action	Post-Approval
Development of Busselton Health Campus	2011/6011	Controlled Action	Post-Approval
Development of Kwinana Quay port facility	2008/4387	Controlled Action	Completed
Develop Trails and a Wetlands Demonstration Site and Centre	2008/4439	Controlled Action	Post-Approval
Eastern Link Project, Busselton WA	2018/8155	Controlled Action	Post-Approval
Industry Zone	2010/5337	Controlled Action	Post-Approval
Lennox Weir Removal, 12kms west Busselton	2021/8915	Controlled Action	Assessment Approach
Lower Vasse River Sediment Removal	2021/9051	Controlled Action	Post-Approval
Mangles Bay Marina Based Tourist Precinct	2010/5659	Controlled Action	Post-Approval
Neighbourhood Shopping Centre and Mixed Business Centre, Ocean Road, Dawesville	2006/3155	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Old Broadwater Farm Estate Subdivision - Stage 3	2009/5231	Controlled Action	Post-Approval
Peel's Retreat Estate - Residential development	2006/3063	Controlled Action	Post-Approval
Peppermint Park Residential Subdivision - Stage 5	2008/4028	Controlled Action	Post-Approval
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval
Ravensthorpe Nickel Project	2001/172	Controlled Action	Post-Approval
Residential Development, Lot 3 & 4 Dorsett Street	2006/2774	Controlled Action	Completed
Residential development Lot 3, 500 Bussell Highway, WA	2013/7098	Controlled Action	Post-Approval
Residential development Lots 8 & 9 King Street	2006/2787	Controlled Action	Completed
retirement units & aged care facility development	2007/3533	Controlled Action	Post-Approval
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed
Shenton Park Subdivision	2004/1479	Controlled Action	Completed
Smiths Beach Project, Yallingup - Coastal Tourism Village	2021/9141	Controlled Action	Referral Publication
Southern Bluefin Tuna Farm	2005/2165	Controlled Action	Completed
Subdivision Lot 1 Dawesville Rd	2005/2394	Controlled Action	Post-Approval
Three Turning Pockets West of Busselton Townsite	2002/846	Controlled Action	Post-Approval
Tourism Villa Facility Development	2008/4025	Controlled Action	Post-Approval
tourist and residential development	2007/3483	Controlled Action	Post-Approval
Upgrade of Ford Road	2005/2113	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval
Not controlled action			
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed
25 Lot Residential Subdivision	2009/4830	Not Controlled Action	Completed
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674	Not Controlled Action	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835	Not Controlled Action	Completed
Cape Naturaliste Road Shared Pathway, Dunsborough, WA	2018/8282	Not Controlled Action	Completed
Causeway Bridge Duplication, Busselton, WA	2018/8309	Not Controlled Action	Completed
Caves Road widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475	Not Controlled Action	Completed
Clear Lot 503, 54 Ocean Road Dawesville, WA	2014/7375	Not Controlled Action	Completed
Construction and operation of an 8 turbine wind farm at Rous Head Harbour, Frema	2003/933	Not Controlled Action	Completed
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Eastport canal estate development stage 5	2007/3737	Not Controlled Action	Completed
Establishment of a National Lifestyle Village	2011/6081	Not Controlled Action	Completed
Expansion of berthing facilities at Kwinana Bulk Terminal	2006/2509	Not Controlled Action	Completed
Expansion of existing Ammonium Nitrate Production Facility	2005/1941	Not Controlled Action	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891	Not Controlled Action	Completed
Florida Estate Residential Subdivision Development Stage 13	2011/6045	Not Controlled Action	Completed
Florida North residential development, Lot 9008, Ocean Road, Dawesville, WA	2015/7462	Not Controlled Action	Completed
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477	Not Controlled Action	Completed
Gas-fired Power Station	2005/2213	Not Controlled Action	Completed
Geo-science Investigations	2005/2069	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Kennedy Bay urban development, Port Kennedy, WA	2014/7122	Not Controlled Action	Completed
Kennedy Park Estate Residential Development	2003/1044	Not Controlled Action	Completed
Kwinana Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed
Limestone quarry expansion	2005/2268	Not Controlled Action	Completed
Limestone Quarry Expansion, Lots 3618 and 1794, Finn Road	2005/2332	Not Controlled Action	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Oman Australia Cable Installation, WA	2021/8922	Not Controlled Action	Completed
Oman Australia Cable - Marine Route Survey	2020/8731	Not Controlled Action	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853	Not Controlled Action	Completed
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	Not Controlled Action	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932	Not Controlled Action	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195	Not Controlled Action	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248	Not Controlled Action	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288	Not Controlled Action	Completed
Warders' Cottages Block 2 'W2'	2022/9148	Not Controlled Action	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185	Not Controlled Action	Completed
Wind Farm development	2005/2105	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952	Not Controlled Action (Particular Manner)	Post-Approval
Ambergate North Residential Development	2009/4802	Not Controlled Action (Particular Manner)	Post-Approval
Arcadia Petroleum - BR12 3D Marine Seismic Survey	2012/6476	Not Controlled Action (Particular Manner)	Post-Approval
Australian Underwater Discovery Centre	2021/9019	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Bremer Basin 2D Marine Seismic Survey, WA	2009/5013	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Garden Island Project, offshore WA	2016/7635	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Geophysical and Geotechnical Surveys	2014/7408	Not Controlled Action (Particular Manner)	Post-Approval
City of Cockburn Sporting Facilties	2005/2139	Not Controlled Action (Particular Manner)	Post-Approval
Construction of urea production plant and supporting infrastructure	2009/5067	Not Controlled Action (Particular Manner)	Post-Approval
Coodanup residential development	2006/3073	Not Controlled Action (Particular Manner)	Post-Approval
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Lake Richmond Boardwalk installation, Rockingham, WA	2013/6977	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
Monaghan's Roundabout Project - Intersection of Bussell Highway and Caves Road, Shire of Busselton	2007/3515	Not Controlled Action (Particular Manner)	Post-Approval
Multipurpose development stage 1 within 340ha	2004/1913	Not Controlled Action (Particular Manner)	Post-Approval
Novacare Lifestyle Village	2001/311	Not Controlled Action (Particular Manner)	Post-Approval
Road upgrades and walk trail development	2009/4958	Not Controlled Action (Particular Manner)	Post-Approval
South Busselton Primary School	2001/290	Not Controlled Action (Particular Manner)	Post-Approval
South West Metropolitan Railway Project	2003/1175	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Subdivision and development of residential dwelling on part Lot 1, Bussell Highw	2006/3023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic survey	2007/3725	Referral Decision	Completed
3D Seismic Survey	2012/6245	Referral Decision	Completed
Ambergate North Residential Community (4896 lots)	2008/4617	Referral Decision	Completed
CO2 3D Seismic Survey Vlaming Sub-Basin	2012/6343	Referral Decision	Completed
Grand Southern Margin 2D Marine Seismic Survey	2008/4573	Referral Decision	Completed
Kennedy Bay Urban Development,PortKennedy,Rockingh	2013/7022	Referral Decision	Completed
Lots 1-5 Bluerise Cove & Lots 801 & 124 Pleasant Grove Rezoning and Subdivision	2008/4295	Referral Decision	Completed
Narelle 3D Marine Seismic Survey	2008/4575	Referral Decision	Completed
Residential Subdivision Lot 801 Pleasant Grove Circle, Falcon, WA	2012/6507	Referral Decision	Referral Publication
Riverbank and Country Road Estates Lot 43 Bussell Highway	2005/2367	Referral Decision	Completed
Sonar Trials and Acoustic Trials	2001/538	Referral Decision	Completed
Water quality improvement trial, Lower Vasse River, Busselton, WA	2013/6975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Albany Canyons group and adjacent shelf break	South-west
Ancient coastline at 90-120m depth	South-west
Cape Mentelle upwelling	South-west

Name	Region
Commonwealth marine environment surrounding the Recherche Archipelago	South-west
Commonwealth marine environment within and adjacent to Geographe Bay	South-west
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Perth Canyon and adjacent shelf break, and other west coast canyons	South-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes Flesh-footed Shearwater [82404]	Aggregation	Known to occur
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging (in high numbers)	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Former Range

Scientific Name	Behaviour	Presence
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high numbers)	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Known to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging (provisioning young)	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur

Scientific Name	Behaviour	Presence
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Known to occur
Neophoca cinerea Australian Sea Lion [22]	Foraging (male and female)	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (abundant food source)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (high density)	Known to occur
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging (on migration)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging Area (annual high use area)	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Known Foraging Area	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (south)	Known to occur
Physeter macrocephalus		
Sperm Whale [59]	Foraging (abundant food source)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX B. SUPPORTING FIGURES FOR SECTION 2.3 METEOROLOGY AND OCEANOGRAPHY

Browse

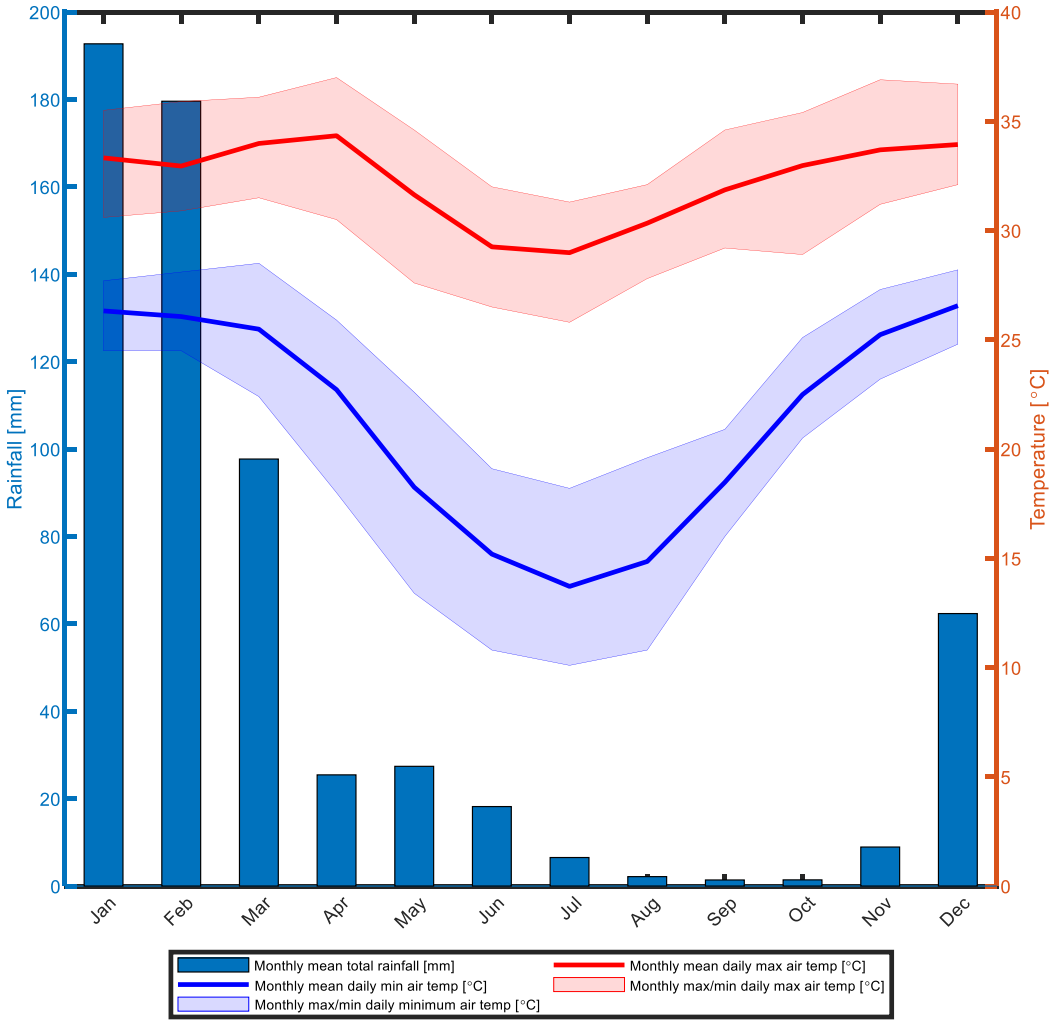


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

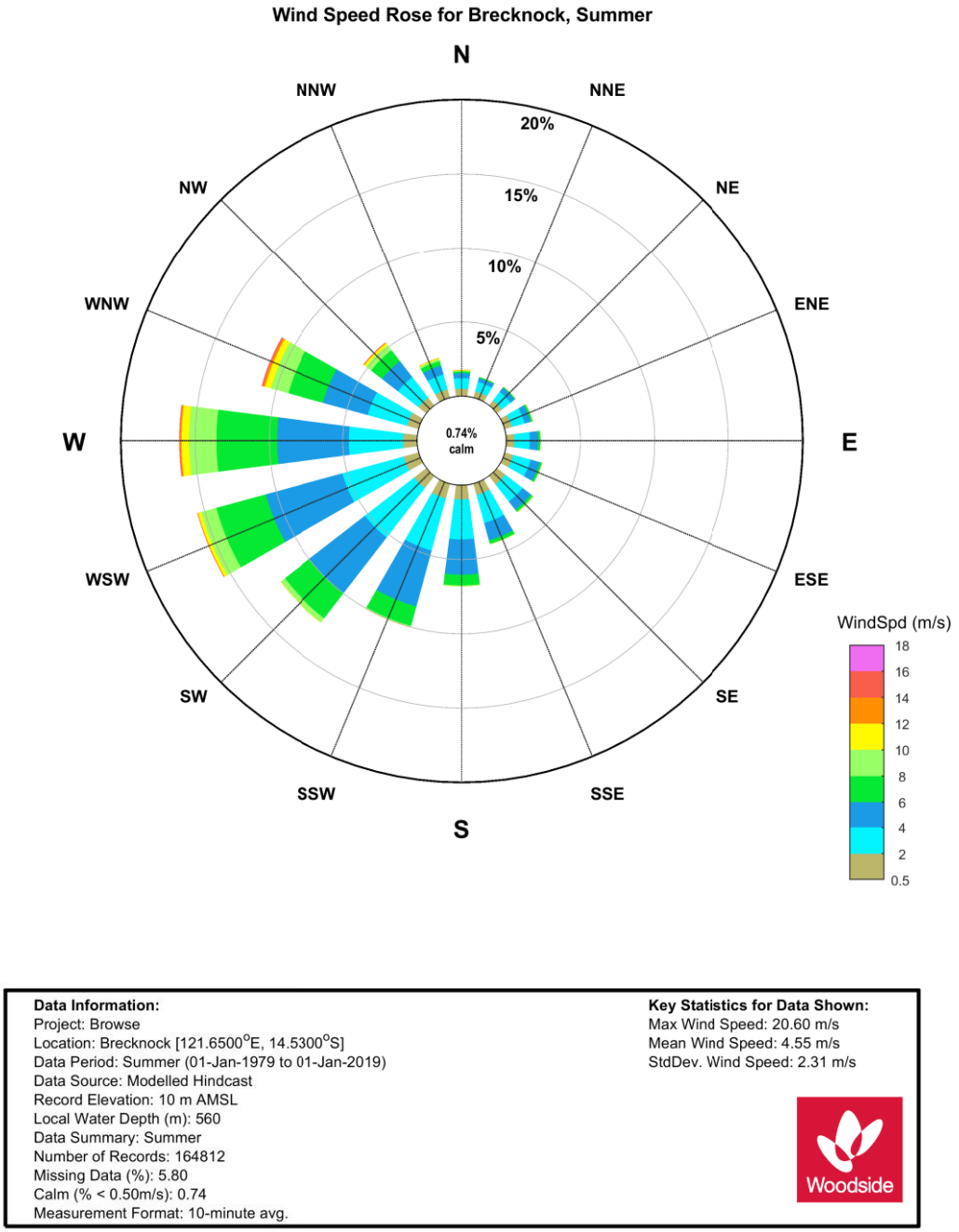
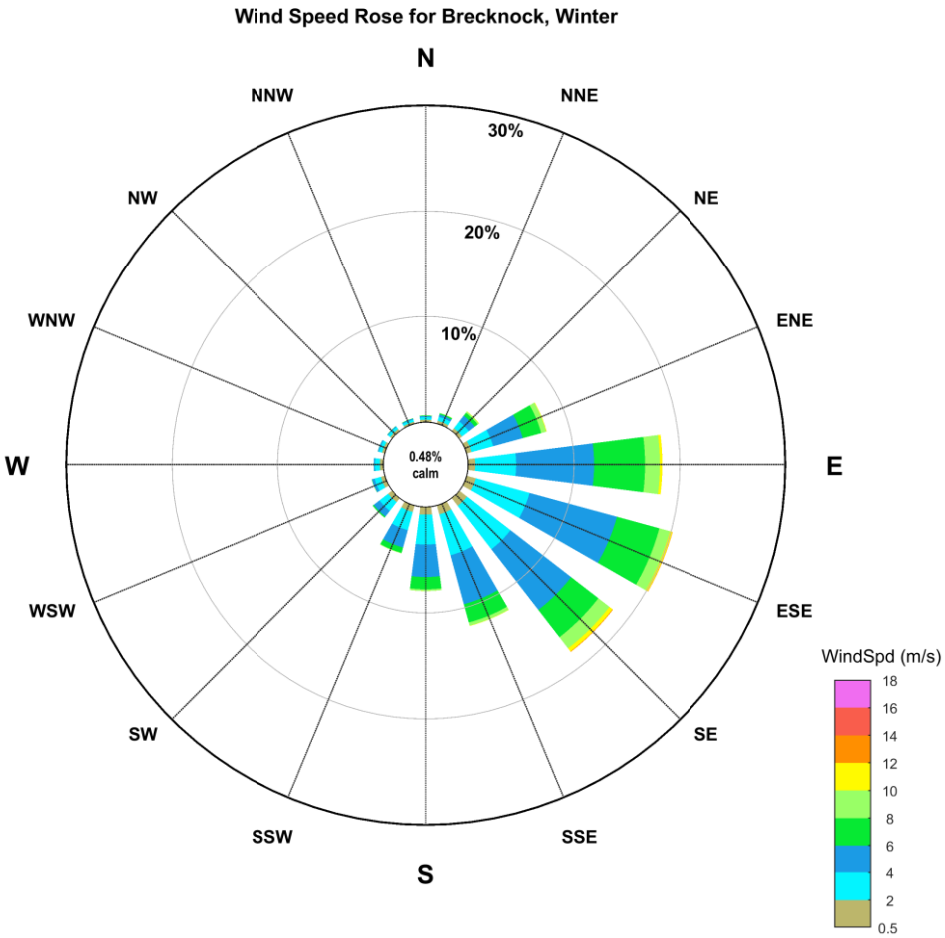


Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).



Data Information:
Project: Browse
Location: Brecknock [121.6500°E, 14.5300°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 560
Data Summary: Winter
Number of Records: 173751
Missing Data (%): 1.10
Calm (% < 0.50m/s): 0.48
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 14.34 m/s
Mean Wind Speed: 4.71 m/s
StdDev. Wind Speed: 2.01 m/s

Woodside

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).

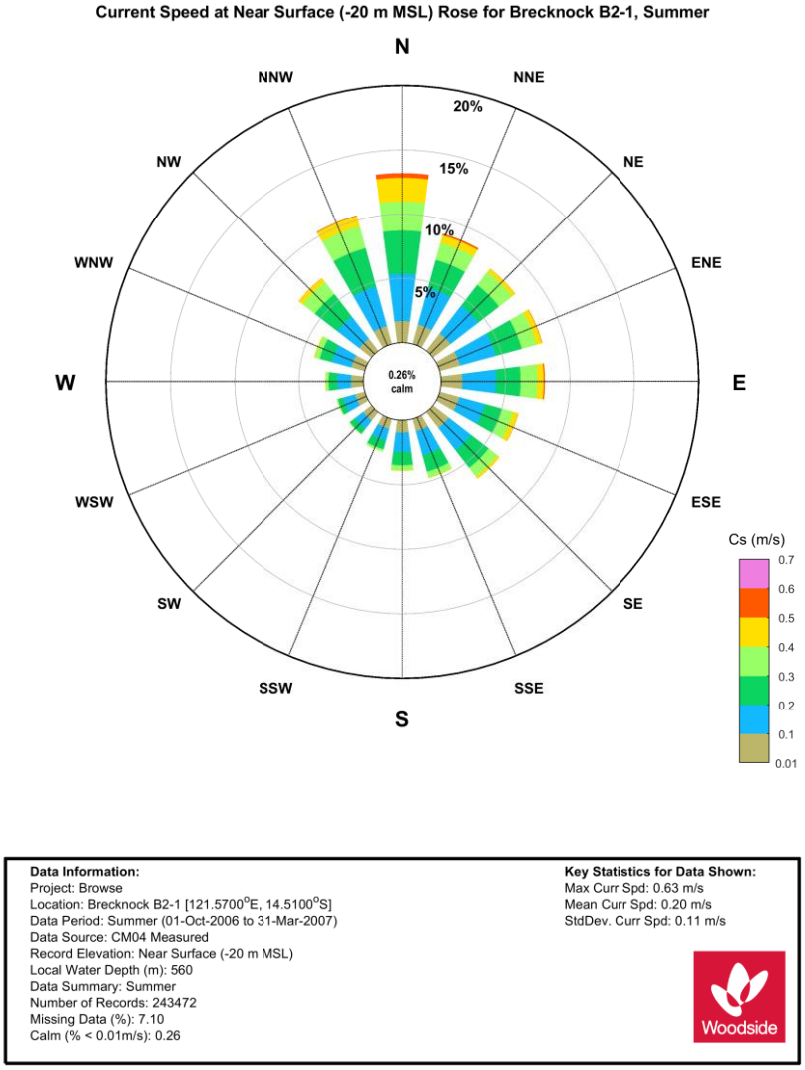


Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

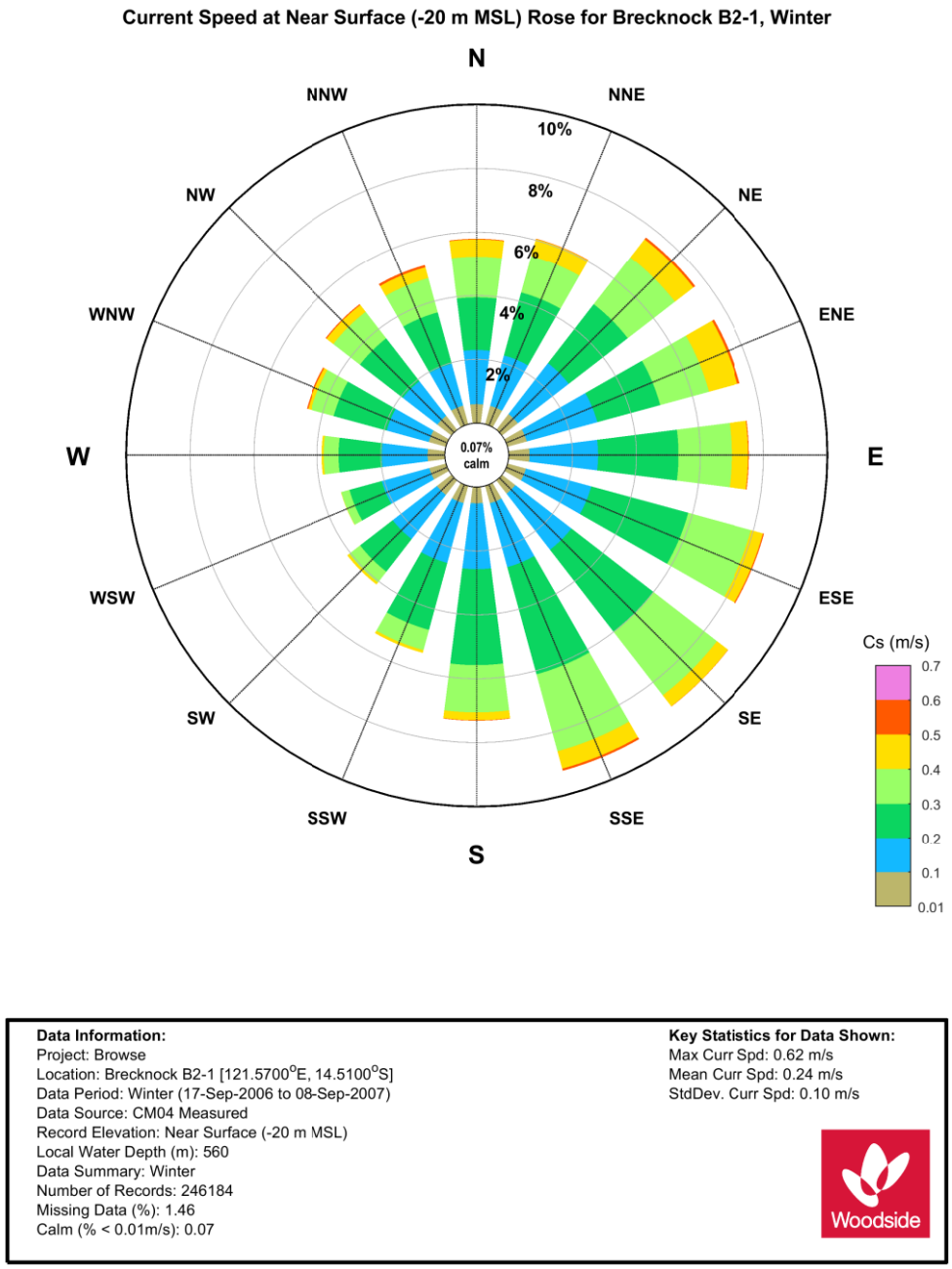


Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

North-west Shelf/Scarborough

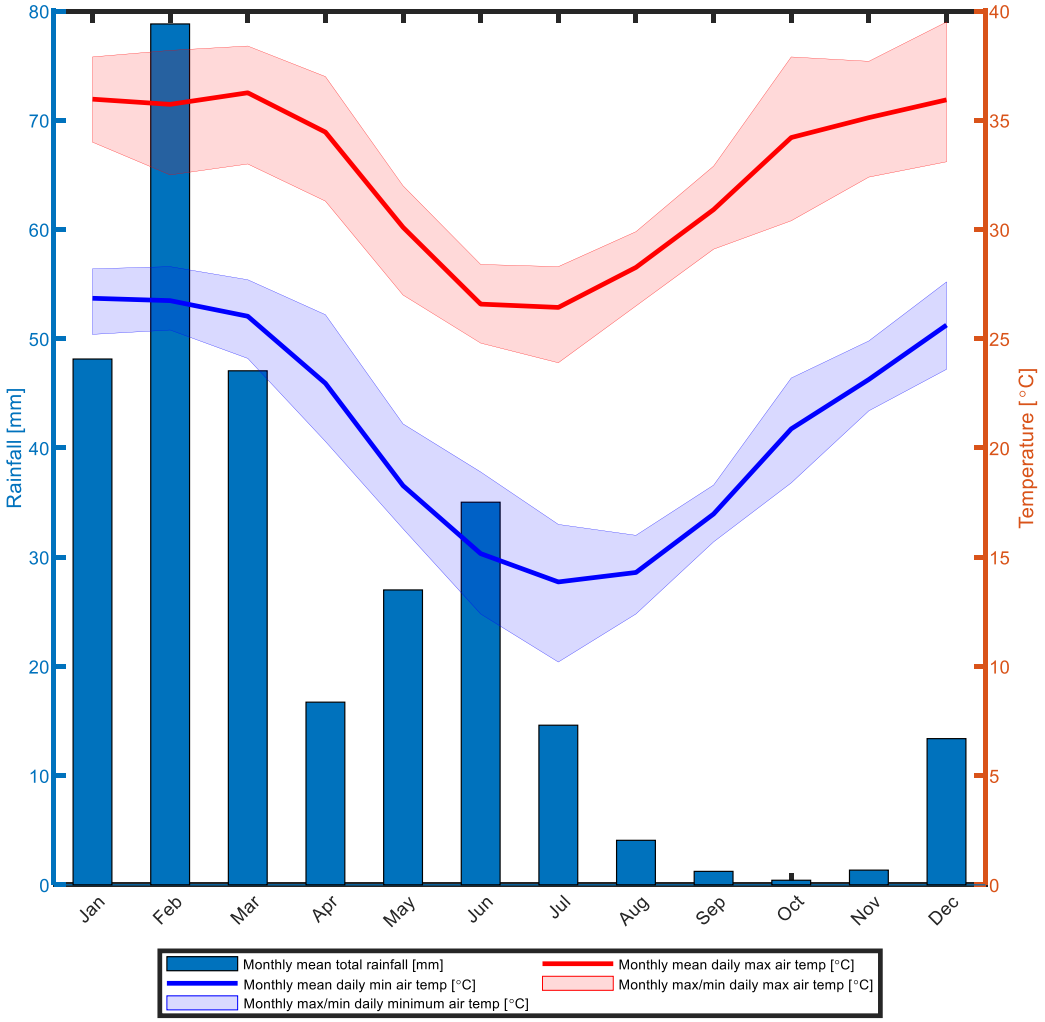
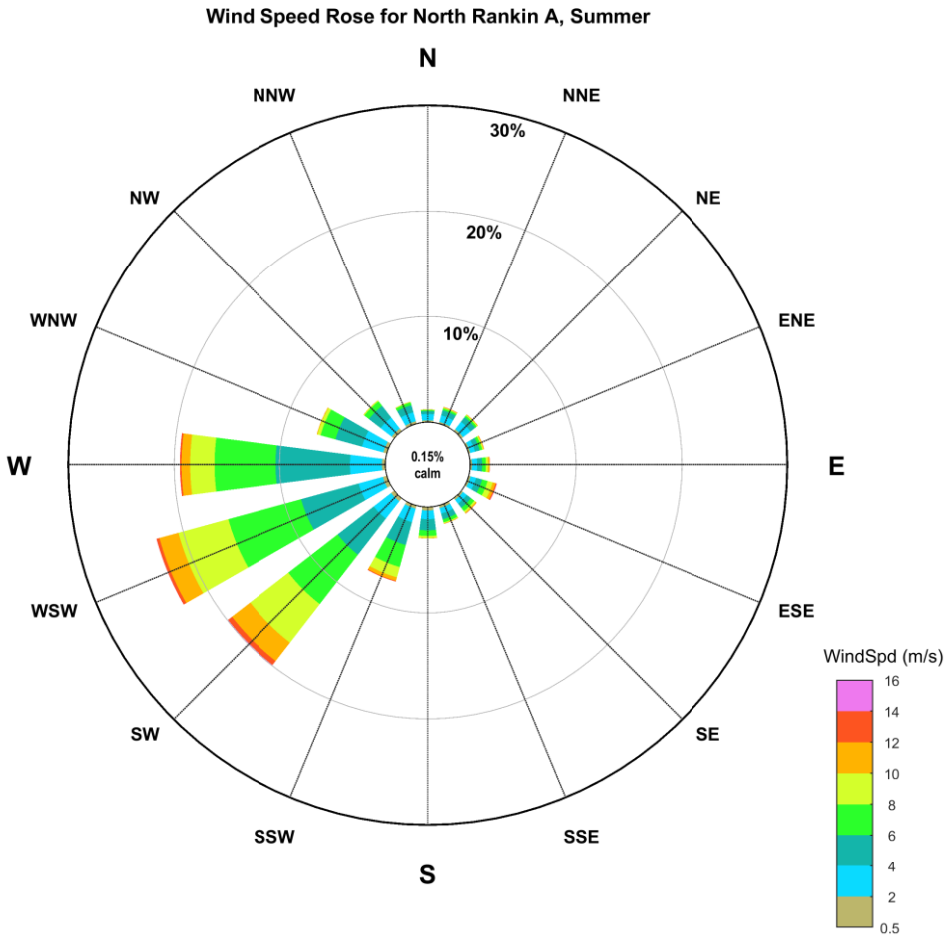


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

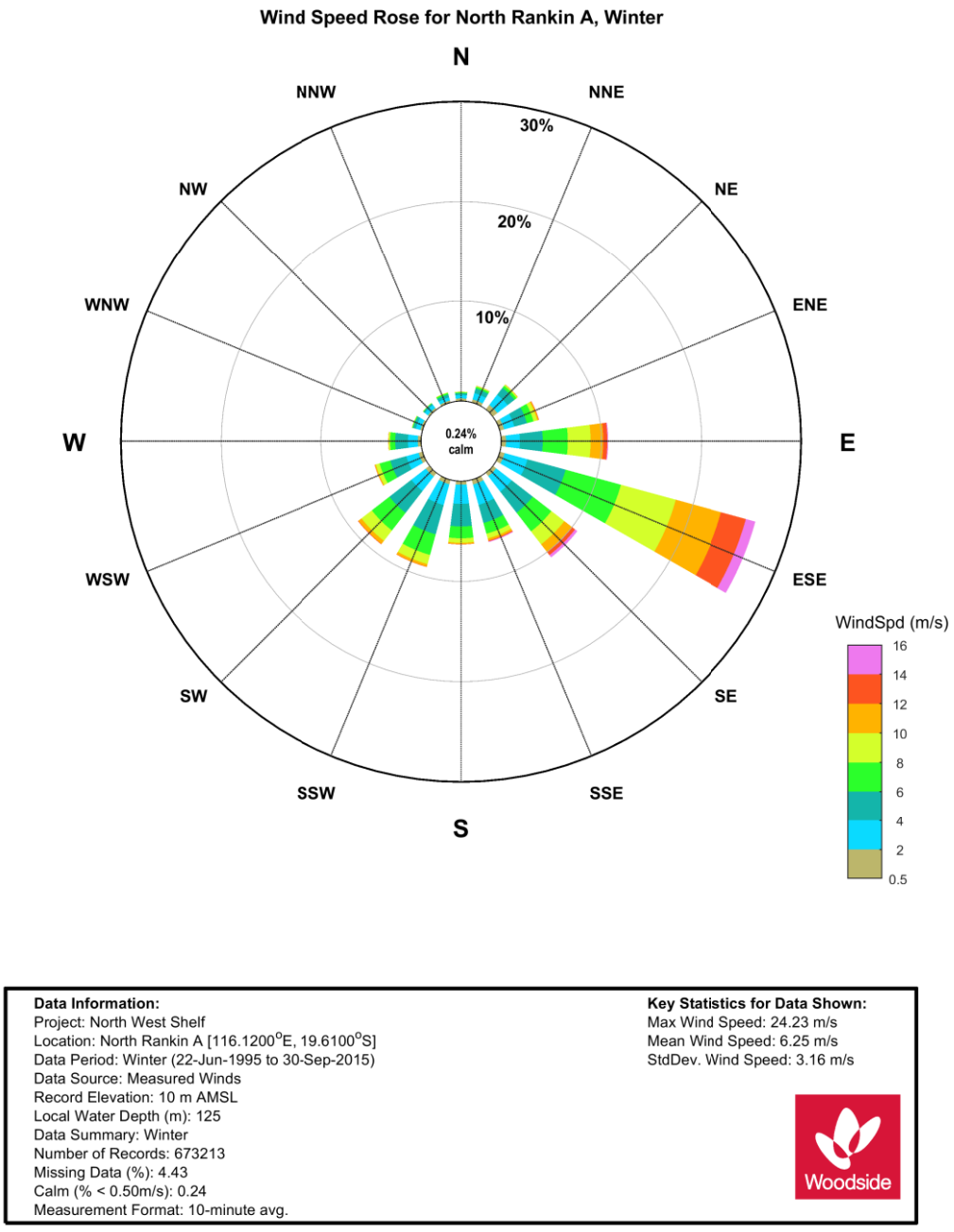


Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Summer (01-Oct-1995 to 30-Nov-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Summer
Number of Records: 674659
Missing Data (%): 7.24
Calm (% < 0.50m/s): 0.15
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 18.50 m/s
Mean Wind Speed: 6.04 m/s
StdDev. Wind Speed: 2.55 m/s

Woodside

Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).



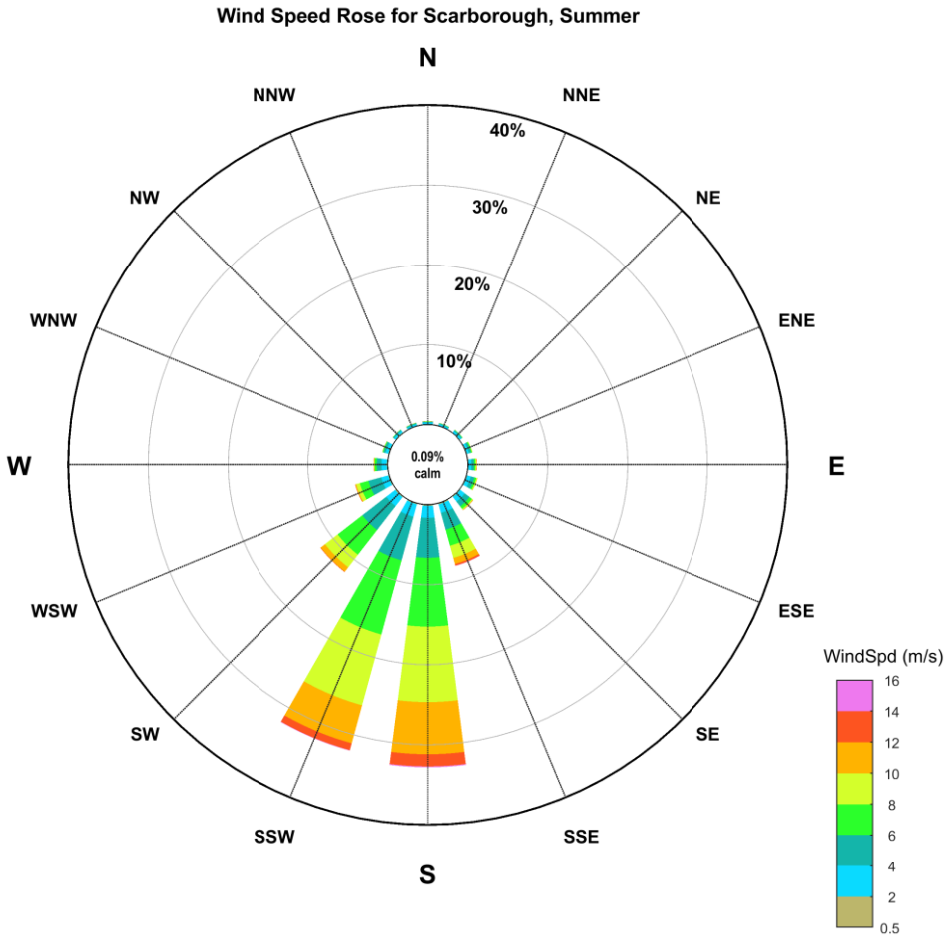
Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Winter (22-Jun-1995 to 30-Sep-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Winter
Number of Records: 673213
Missing Data (%): 4.43
Calm (% < 0.50m/s): 0.24
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 24.23 m/s
Mean Wind Speed: 6.25 m/s
StdDev. Wind Speed: 3.16 m/s

Woodside

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).

Scarborough



Data Information:
Project: North West Shelf
Location: Scarborough [113.2000°E, 19.8800°S]
Data Period: Summer (01-Jan-1979 to 01-Jan-2011)
Data Source: CSFR
Record Elevation: 10 m AMSL
Local Water Depth (m): 950
Data Summary: Summer
Number of Records: 129521
Missing Data (%): 7.46
Calm (% < 0.50m/s): 0.09
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 16.75 m/s
Mean Wind Speed: 7.23 m/s
StdDev. Wind Speed: 2.64 m/s

Woodside

Figure 4. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.

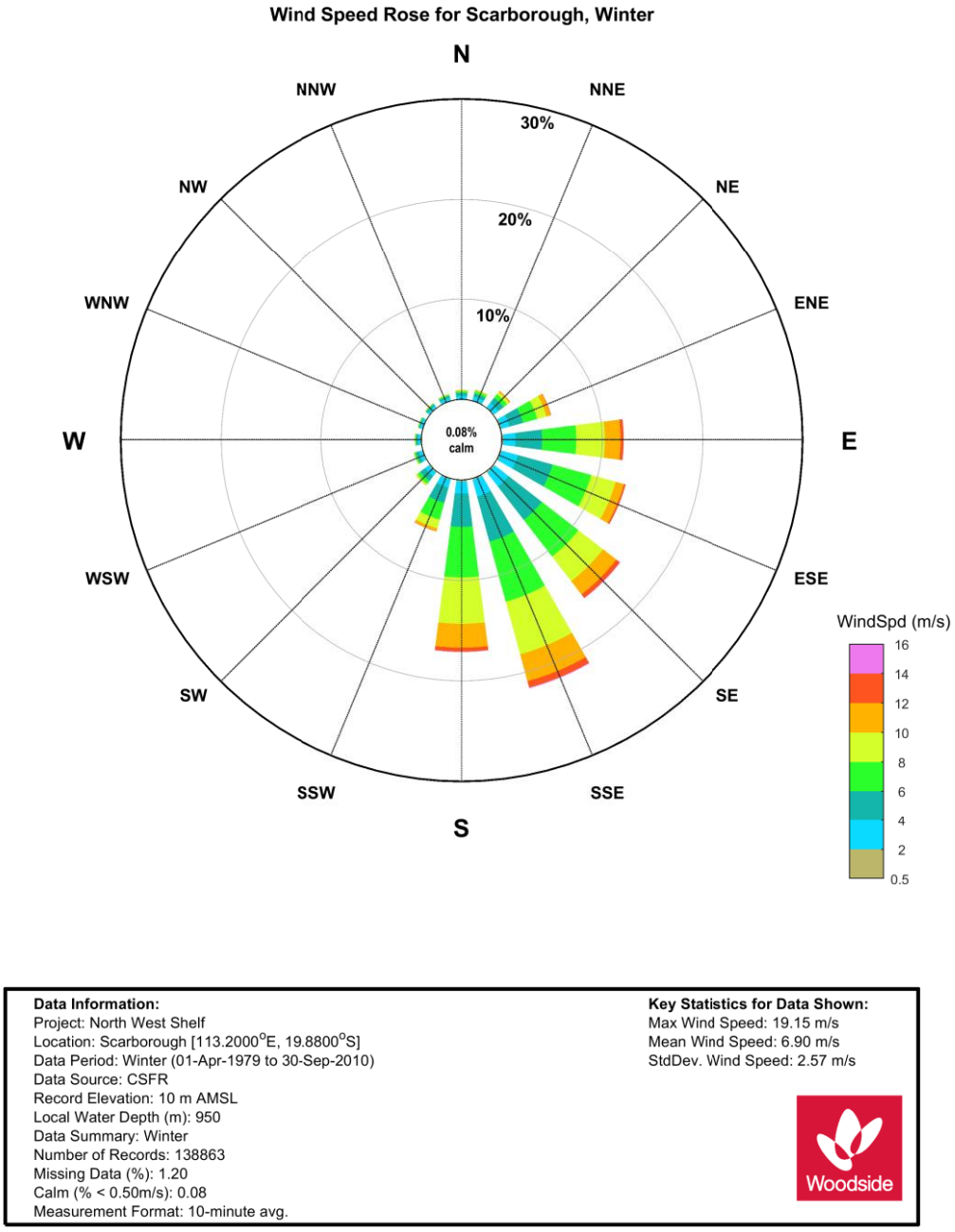


Figure 5. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016).

North-west Shelf

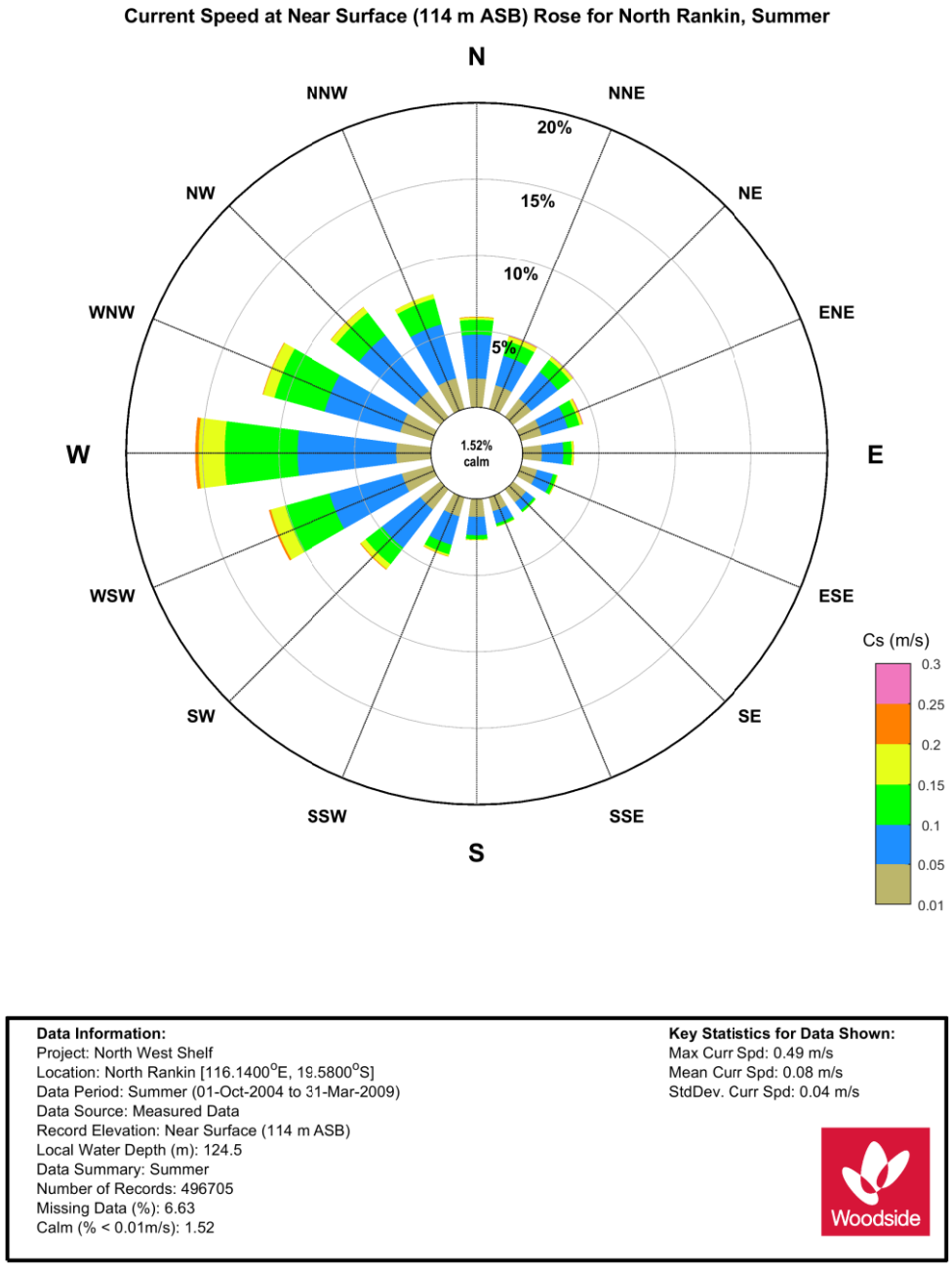


Figure 6. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

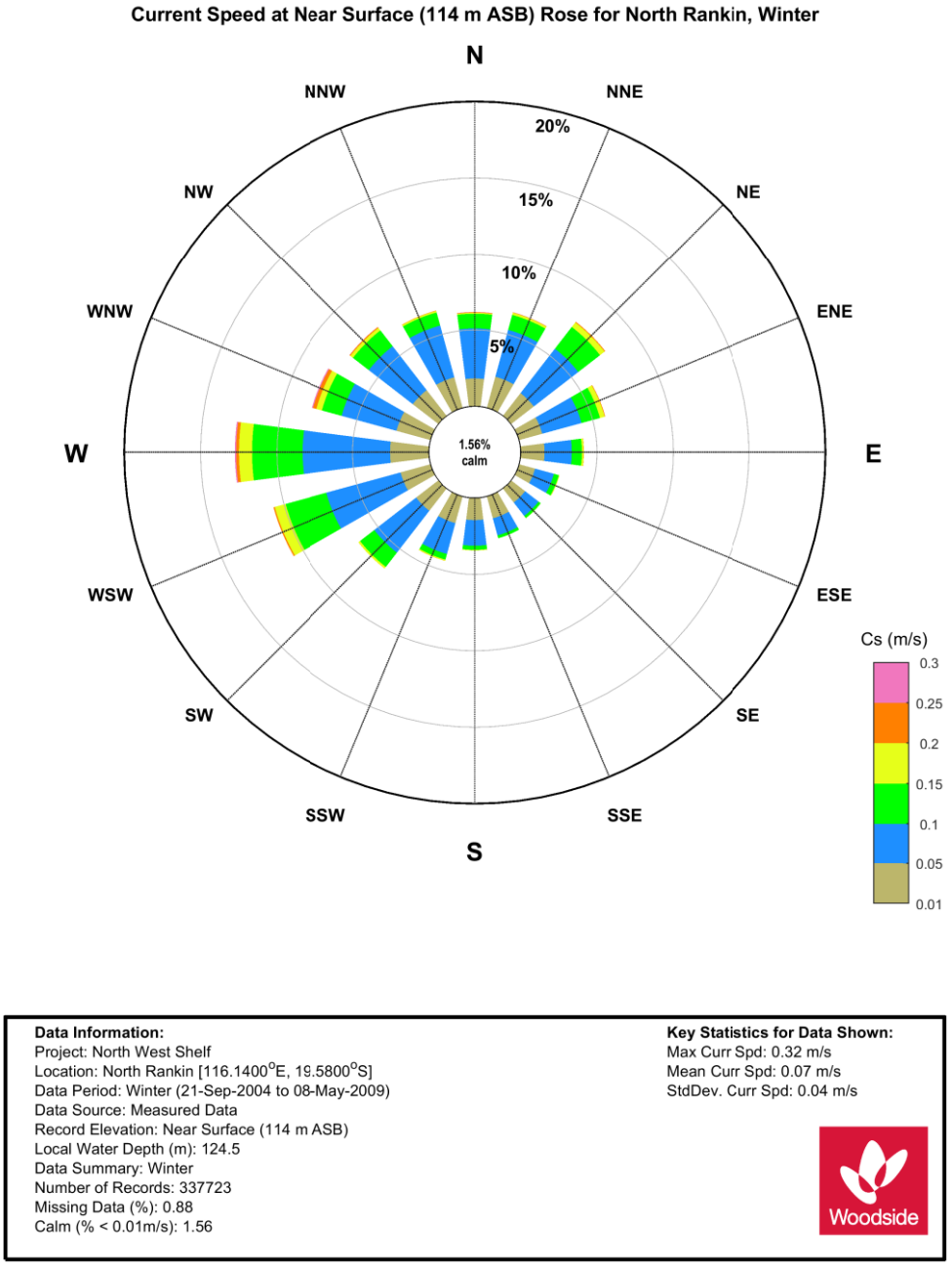


Figure 7. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

Scarborough

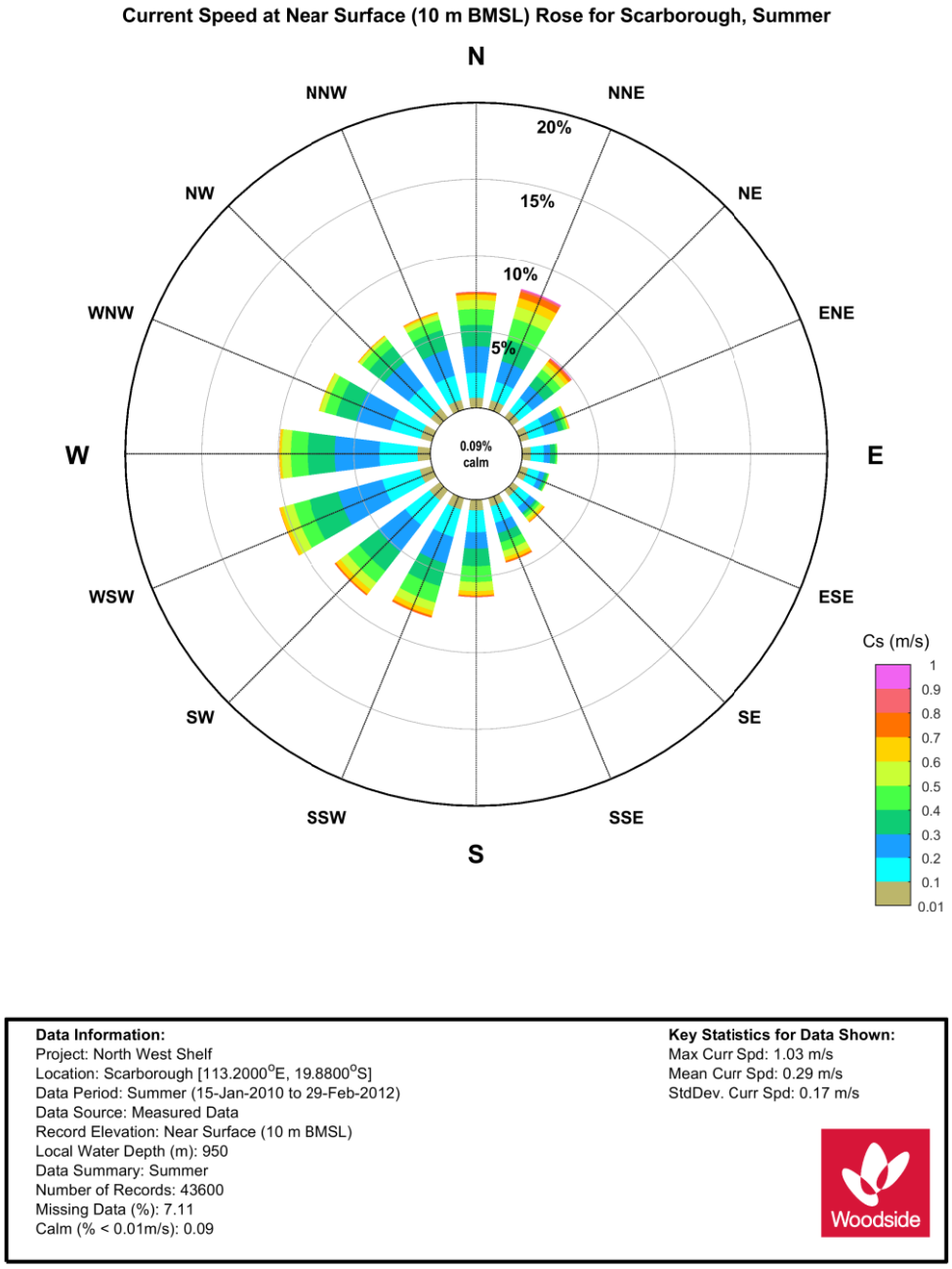


Figure 8. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

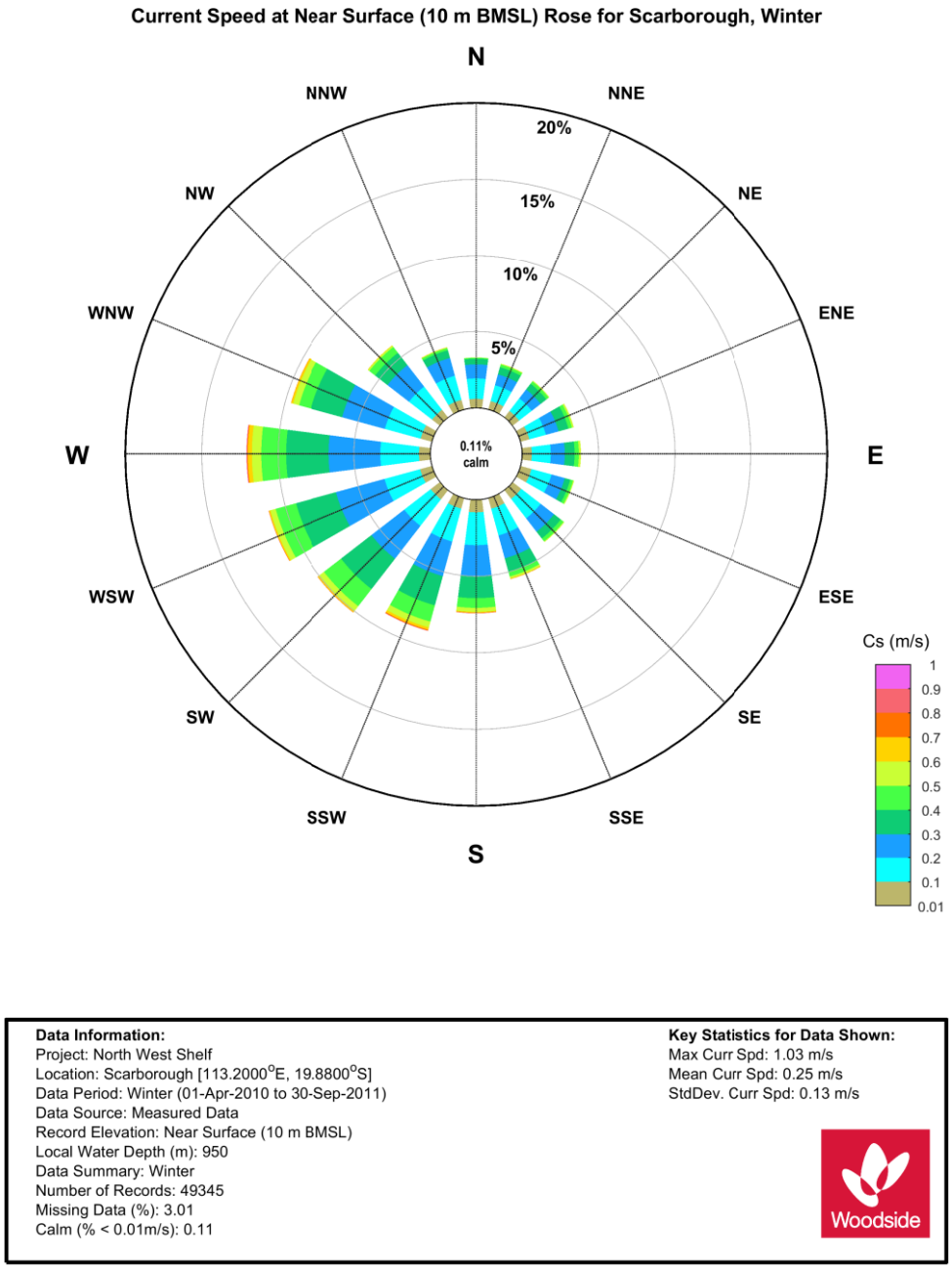


Figure 9. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

North-west Cape

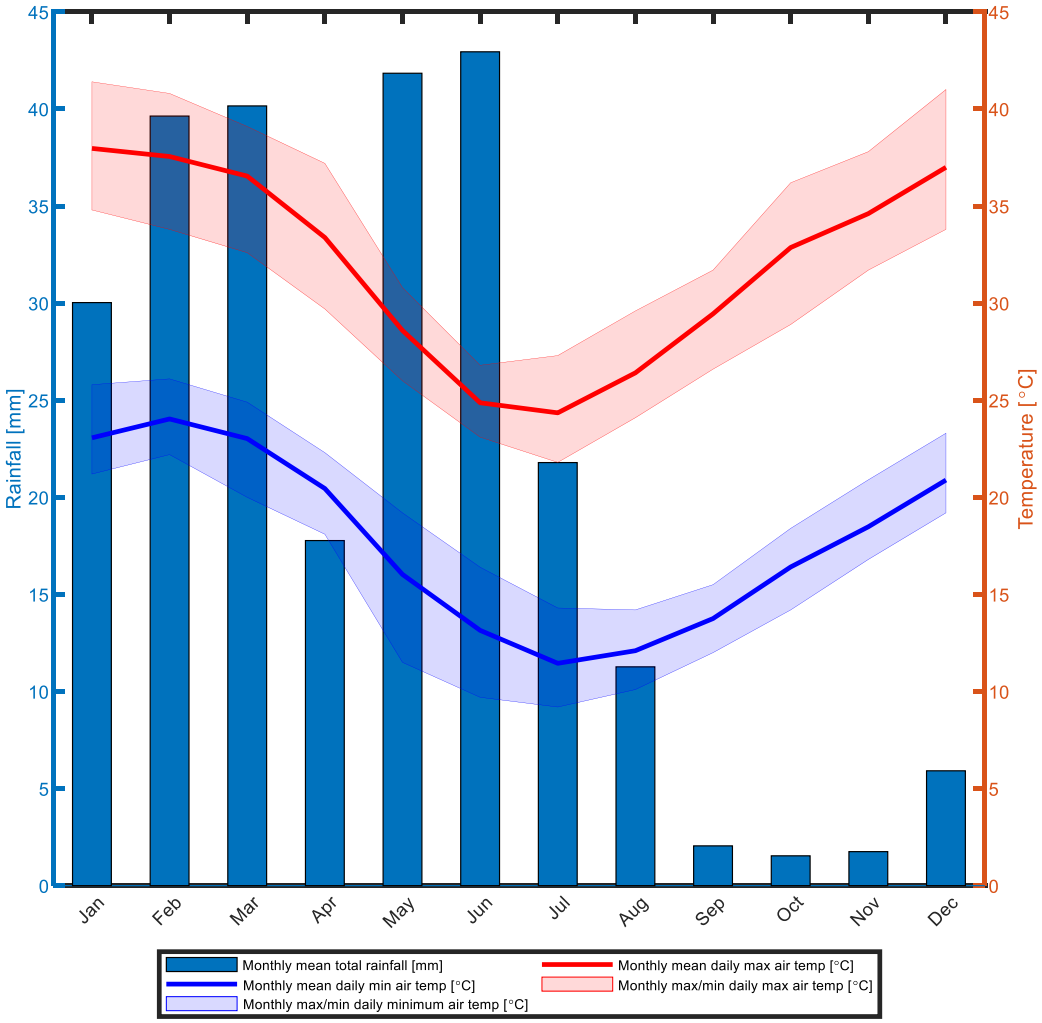


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

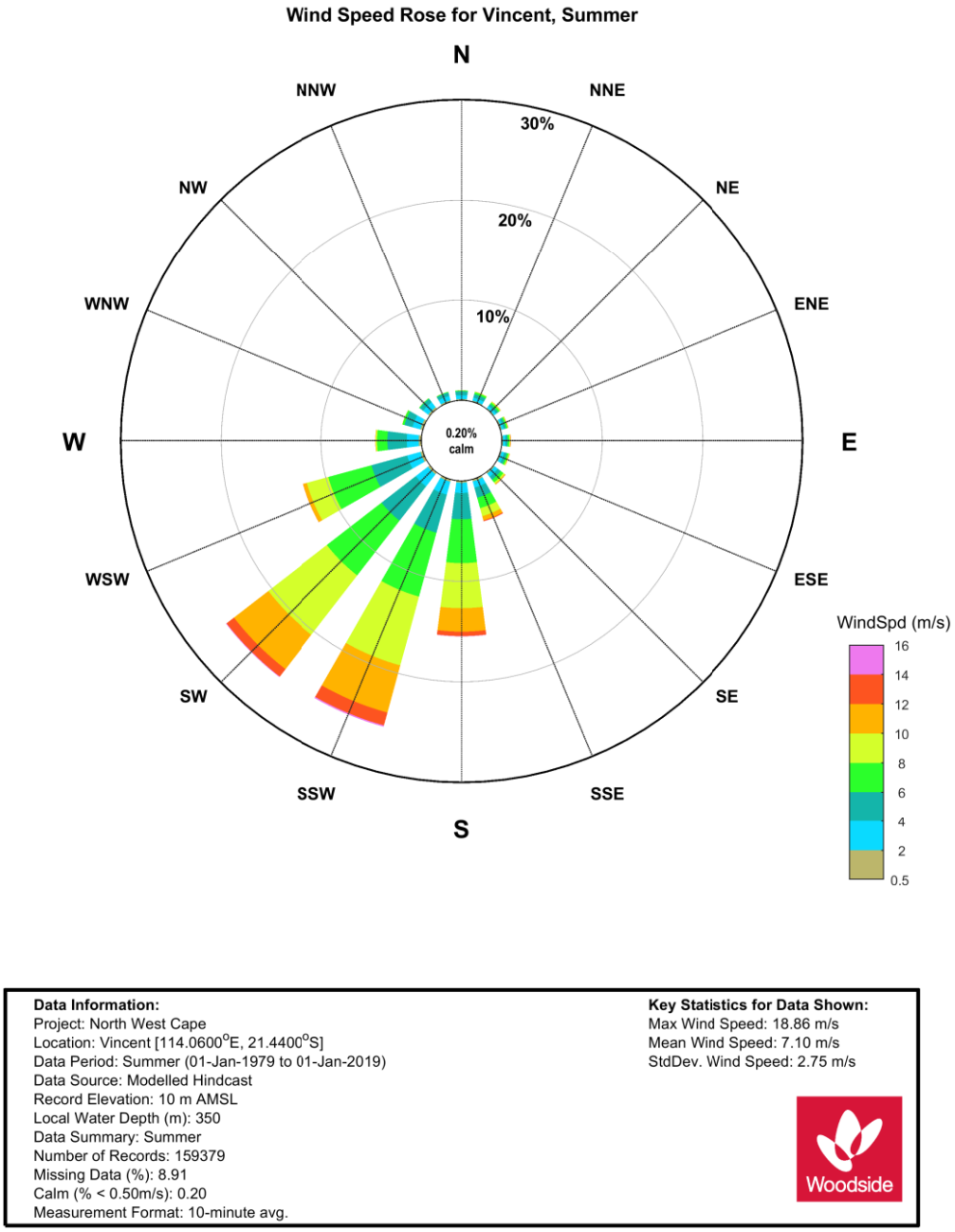
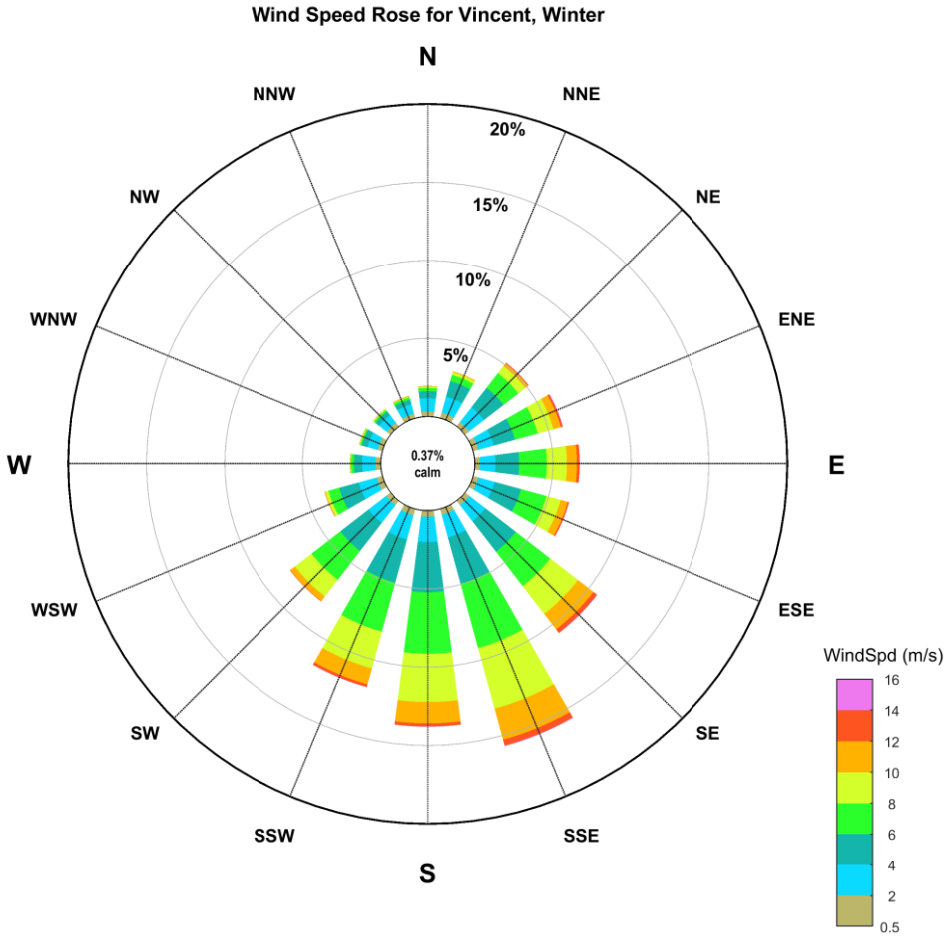


Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).



Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 350
Data Summary: Winter
Number of Records: 173626
Missing Data (%): 1.17
Calm (% < 0.50m/s): 0.37
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 19.39 m/s
Mean Wind Speed: 6.23 m/s
StdDev. Wind Speed: 2.78 m/s

Woodside

Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. In winter, winds at are predominantly from the S to SE, associated with the South East Trades. Easterly gales are experienced at the Vincent location due to high pressure systems generating from the Great Australian Bight area to the site (MetOcean Engineers, 2005).

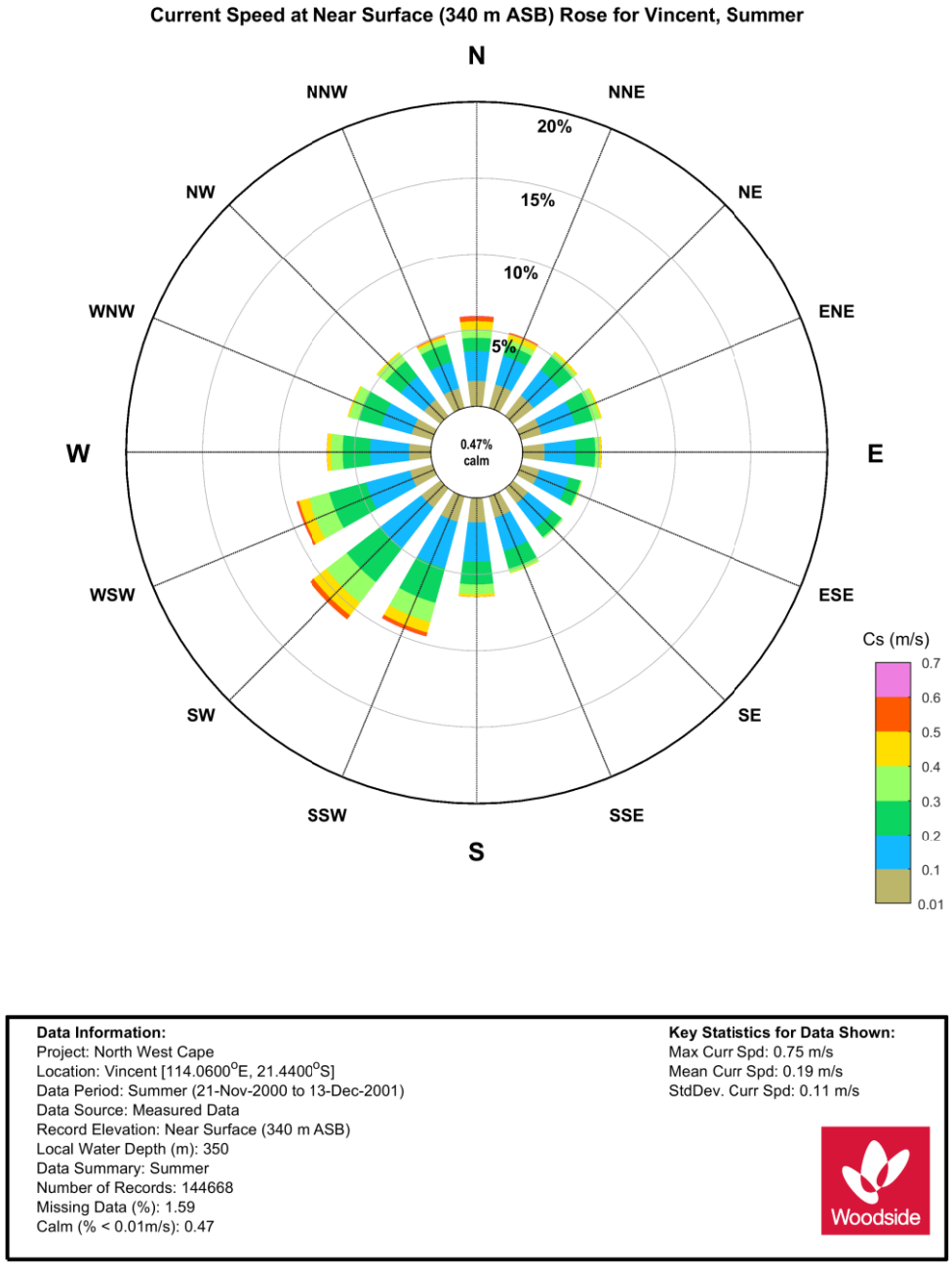


Figure 4. Summer (May – Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

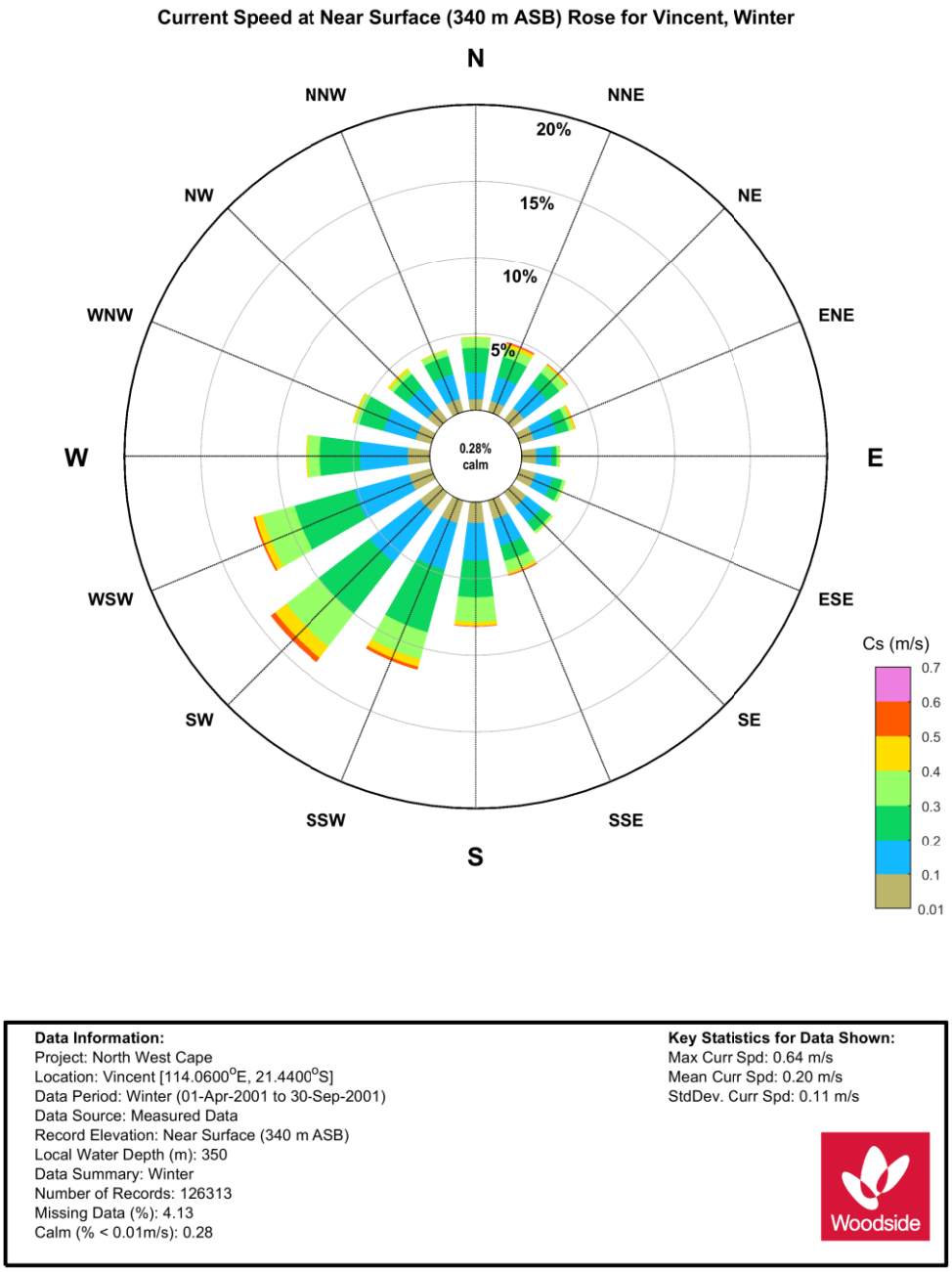


Figure 5. Winter (Nov – Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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Programme: September 2006 to February 2008 Final Data Report.” CRN: JB0020RT0019.

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WEL 2011. Greater Western Flank Detailed Metocean Design Criteria, Rev 2. CRN: A3000RG5492827.

WEL 2016. Vincent – Basic Design Data Specification sheet – Metocean CRN: VA0000RT1400067309.

WEL 2015. Winds Measured at North Rankin A 1995-2015.

WEL 2018. Scarborough Development - Non-Cyclonic and Operational Metocean Design Criteria – Spreadsheet, Revision A, CRN: SA0009CT1400722569.

WEL 2019. “Browse Development – Metocean Design Basis” CRN: JJ0013ST1400274448.

APPENDIX C-2: ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT PROTECTED MATTERS SEARCH TOOL REPORTS

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: 18-Jun-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:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	21
Listed Migratory Species:	33

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:	56
Whales and Other Cetaceans:	23
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
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:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	23
Key Ecological Features (Marine):	1
Biologically Important Areas:	4
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Phaethon lepturus fulvus](#) Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
[Phaethon rubricauda westralis](#) Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
FISH		

Scientific Name	Threatened Category	Presence Text
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
[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 may occur within area

Scientific Name	Threatened Category	Presence Text
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Isurus paucus](#) Longfin Mako [82947]		Species or species habitat likely to occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
[Mobula birostris as Manta birostris](#) Giant Manta Ray [90034]		Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
[Pristis zijsron](#) Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area

Migratory Wetlands Species

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 melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Fish		
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
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		

Scientific Name	Threatened Category	Presence Text
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis kingii as Disteira kingii		
Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli		
MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major		
Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus		
Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii		
Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii		
Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
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
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area

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
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Controlled action			
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
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
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	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
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

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

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus		
Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus		
Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Distribution	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: 18-Jun-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:	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:	38
Listed Migratory Species:	54

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:	92
Whales and Other Cetaceans:	26
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:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	39
Key Ecological Features (Marine):	1
Biologically Important Areas:	25
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species		[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus		
Red Goshawk [942]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
FISH		

Scientific Name	Threatened Category	Presence Text
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	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
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	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
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 likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
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
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
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
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]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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 likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica		
Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may 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 veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		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 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 may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		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		

Scientific Name	Threatened Category	Presence Text
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
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
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat known to occur within area
Reptile		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat 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
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Aipysurus tenuis](#) Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera 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
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]		Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		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

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

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

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Murujuga	National Park	WA
Murujuga	5(1)(h) Reserve	WA
Unnamed WA36915	Nature Reserve	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
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Controlled action			
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
North West Shelf Gas Venture Phase VI Expansion	2007/3436	Controlled Action	Referral Decision
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
site preparations	2005/2391	Controlled Action	Post-Approval
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Methanol plant	2001/521	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago,	2014/7160	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
WA			
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Pluto-North West Shelf Interconnector, Burrup Peninsula, WA	2018/8353	Not Controlled Action	Completed
Port Expansion and Dredging	2003/1265	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Woodside Project Facilities Increase	2006/3191	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
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
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	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
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

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

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]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Migration corridor	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur

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]	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
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data 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: 18-Jun-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:	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:	38
Listed Migratory Species:	54

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:	92
Whales and Other Cetaceans:	26
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:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	39
Key Ecological Features (Marine):	1
Biologically Important Areas:	25
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species		[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus		
Red Goshawk [942]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
FISH		

Scientific Name	Threatened Category	Presence Text
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	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
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	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
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 likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
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
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
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
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]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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 likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica		
Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may 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 veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		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 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 may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		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		

Scientific Name	Threatened Category	Presence Text
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
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
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat known to occur within area
Reptile		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat 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
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Aipysurus tenuis](#) Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera 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
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]		Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		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

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

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

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Murujuga	National Park	WA
Murujuga	5(1)(h) Reserve	WA
Unnamed WA36915	Nature Reserve	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
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Controlled action			
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
North West Shelf Gas Venture Phase VI Expansion	2007/3436	Controlled Action	Referral Decision
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
site preparations	2005/2391	Controlled Action	Post-Approval
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Methanol plant	2001/521	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago,	2014/7160	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
WA			
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Pluto-North West Shelf Interconnector, Burrup Peninsula, WA	2018/8353	Not Controlled Action	Completed
Port Expansion and Dredging	2003/1265	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Woodside Project Facilities Increase	2006/3191	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
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
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	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
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

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

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]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Migration corridor	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur

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]	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
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data 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: 14-Jun-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:	2
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	55
Listed Migratory Species:	63

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	105
Whales and Other Cetaceans:	30
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	7
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:	34
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	229
Key Ecological Features (Marine):	6
Biologically Important Areas:	43
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
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
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

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia lesueur Barrow and Boodie Islands subspecies		
Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area
Dasyurus hallucatus		
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus barrowensis		
Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus		
Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus Central Australian subspecies		
Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Minuria tridens Minnie Daisy [13753]	Vulnerable	Species or species habitat may occur within area
REPTILE		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus zastictus Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat 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 leucogaster Brown Booby [1022]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
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	Species or species habitat 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
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]		Species or species habitat 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]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
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

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
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may 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
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding 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
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat 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	Species or species habitat may 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
Sula leucogaster		
Brown Booby [1022]		Breeding known to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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]		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

Current Scientific Name	Status	Type of Presence
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
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
Dampier	Habitat Protection Zone (IUCN IV)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)

Park Name	Zone & IUCN Categories
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Dampier	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
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
Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Cape Range	National Park	WA
Great Sandy Island	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Jurabi Coastal Park	5(1)(h) Reserve	WA
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Murujuga	National Park	WA
Murujuga	5(1)(h) Reserve	WA
Ningaloo	Marine Park	WA
North Sandy Island	Nature Reserve	WA
North Turtle Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Serrurier Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA36907	5(1)(h) Reserve	WA
Unnamed WA36909	5(1)(h) Reserve	WA
Unnamed WA36910	5(1)(h) Reserve	WA
Unnamed WA36913	Nature Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed 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

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
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Burrup Peninsula Seawater Supply Scheme Upgrade	2023/09698		Completed
Dampier Seawater Desalination Plant	2022/09395		Completed
Gorgon Gas Development	2003/1294		Post-Approval
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Optimised Mardie Solar Salt Project	2022/9169		Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Anketell Point Iron Ore Processing & Export Port	2009/5120	Controlled Action	Post-Approval
Balmoral South Iron Ore Mine	2008/4236	Controlled Action	Post-Approval
Cape Lambert Port B Development	2008/4032	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
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
Eramurra Industrial Salt Project	2021/9027	Controlled Action	Assessment Approach
Eramurra Industrial Salt Project, near Karratha, WA	2019/8448	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Mardie Project, 80 km south west of Karratha, WA	2018/8236	Controlled Action	Post-Approval
North West Shelf Gas Venture Phase VI Expansion	2007/3436	Controlled Action	Referral Decision
Perdaman Urea Project, near Karratha, WA	2018/8383	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Port Hedland Outer Harbour Development and associated marine and terrestrial in	2008/4159	Controlled Action	Post-Approval
Proposed West Pilbara Iron Ore Project	2009/4706	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Simpson Development	2000/59	Controlled Action	Completed
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
site preparations	2005/2391	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Widening and resurfacing two principal roads servicing the Dampier Port Authori	2010/5677	Controlled Action	Completed
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
Baniyas-1 Exploration Well, EP-424, near Onslow	2007/3282	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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 Loadout Facility and Laydown Area	2002/598	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 Industrial Land, Port of Dampier	2003/1293	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 of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Expansion 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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Extension of Simpson Oil Platforms & Wells	2002/685	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Huascaran-1 exploration well (WA-292-P)	2001/539	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916	Not Controlled Action	Completed
Methanol plant	2001/521	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA	2014/7160	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Pluto-North West Shelf Interconnector, Burrup Peninsula, WA	2018/8353	Not Controlled Action	Completed
Port Expansion and Dredging	2003/1265	Not Controlled Action	Completed
Port Hedland Channel Risk and Optimisation Project, WA	2017/7915	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed
Stages 1 & 2 Port of Dampier Security Upgrade & Associated Works	2004/1751	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Widening of MOF Road	2005/2305	Not Controlled Action	Completed
Woodside Project Facilities Increase	2006/3191	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
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
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
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Cape Preston East - Iron Ore Export Facilities, Pilbara, WA	2013/6844	Not Controlled Action (Particular Manner)	Post-Approval
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Dampier Marine Services Facility including 300m Wharf and Dredging Works	2009/5108	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Diesel Fuel Bunker Operation	2012/6289	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Dredging of marine sediment to enable construction of eight berths and a turnin	2010/5678	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
MOF Road Widening and Resurfacing Works	2011/5843	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Nelson Point Dredging	2009/4920	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		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
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Scarborough Development nearshore component, NWS, WA	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
The Dampier Heavy Load Out Facility Berth and Swing Basin Expansion	2012/6271	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular 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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
upgrade of 3 community recreation sites	2005/2349	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
3D Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
construction of a new loadout facility and associated laydown area south of the	2002/579	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Outer Harbour Development and associated marine and terrestial infrastructure	2008/4148	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence

Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur

Scientific Name	Behaviour	Presence
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
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

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Migration corridor	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Rhincodon typus Whale Shark [66680]	Foraging (high density prey)	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
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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APPENDIX C-3: DEPARTMENT OF PLANNING, LAND, HERITAGE AND ABORIGINAL ENQUIRY SYSTEM RESULTS

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

Search Criteria

728 Aboriginal Cultural Heritage (ACH) Register in Shapefile - 20240612 NRC Advertising EMBA/NRCAdvertisingEMBA_GDA94, 20240612 NRC Consultation EMBA/NRCConsultationEMBA_GDA94, 20240612 NRC Ecological EMBA/NRCEcologicalEMBA_GDA94, 20240612 NRC Ops Area/NRCOpsArea_GDA94, 20240612 NRC Socio-Cultural EMBA/NRCSocioCulturalEMBA_GDA94. Warning: Search area complex so results may be inaccurate. Contact DPLH for assistance.

Disclaimer

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the *Aboriginal Heritage Act 1972*.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you provide the details to the Department via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form and we will make every effort to rectify it as soon as possible.

Copyright

Terminology

ID: ACH on the Register is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH on the former Register the ID numbers remain unchanged and use the new format. For example the ACH ID of the place Swan River was previously '3536' and is now 'ACH-00003536'.

Access and Restrictions:

- **Boundary Reliable (Yes/No):** Indicates whether to the best knowledge of the Department, the location and extent of the ACH boundary is considered reliable.
- **Boundary Restricted = No:** Represents the actual location of the ACH as understood by the Department..
- **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the ACH is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- **Culturally Sensitive = No:** Availability of information that the Department of Planning, Lands and Heritage holds in relation to the ACH is not restricted in any way.
- **Culturally Sensitive = Yes:** Some of the information that the Department of Planning, Lands and Heritage holds in relation to the ACH is restricted if it is considered culturally sensitive information. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the people who provided the information. To request access please contact via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form.
- **Culturally Sensitive Nature:**
  - **No Gender / Initiation Restrictions:** *Anyone* can view the information.
  - **Men only:** Only *males* can view restricted information.
  - **Women only:** Only *females* can view restricted information.

Status:

- **Register:** Aboriginal cultural heritage places that are assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*.
- **Lodged:** Information which has been received in relation to an Aboriginal cultural heritage place, but is yet to be assessed under Section 5 of the *Aboriginal Heritage Act 1972.*
- **Historic:** Aboriginal heritage places assessed as not meeting the criteria of Section 5 of the *Aboriginal Heritage Act 1972*. Includes places that no longer exist as a result of land use activities with existing approvals.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place.

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
873	MONTEBELLO IS: NOALA CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07287
911	40 MILE - EASTERN POINT	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07271
912	40 MILE - EASTERN DUNES	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07272
919	ENDERBY IS.27: GOODWYN VIEW	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07279
926	MONTEBELLO IS: HAYNES CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07286
927	ENDERBY IS.16: WHITE BASIN	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07233
929	ENDERBY IS.18: MANGROVE CK	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	P07235
930	ENDERBY IS.19: MANGROVE CK	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P07236
931	ENDERBY IS.20: MANGROVE CK	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07237
932	ENDERBY IS.21: BACK QUARRY	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	P07238
933	ENDERBY IS.22: TEREBRALIA	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07239
934	ENDERBY IS.23: GRINDING	No	No	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	P07240
936	ENDERBY IS.25: DINGHY MIDDEN	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07242
937	ENDERBY IS.26: NORTH POINT	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P07243
966	ROSEMARY IS.11: CHOOKIE BAY	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07219
967	ROSEMARY IS.12: CHOOKIE BAY	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	P07220
968	ROSEMARY IS.13	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07221

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
969	ROSEMARY IS.14	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07222
970	ROSEMARY IS.15: AIRSTRIP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07223
971	ROSEMARY IS.16: AIRSTRIP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P07224
972	ROSEMARY IS.17: AIRSTRIP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	P07225
973	ROSEMARY IS.18: DEEP WATER	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07226
974	ROSEMARY IS.19: CHITON	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07227
975	ROSEMARY IS.20: HALFWAY CK	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07228
977	ROSEMARY IS.22	No	No	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P07230
978	ROSEMARY IS.23: WADJURU R/H	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Traditional Structure; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	P07231
979	ROSEMARY IS.24: HUNGERFORD	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07232
1023	WANGALNGURRU.	No	Yes	No	No Gender / Initiation Restrictions	Register	Historical; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02895
1062	LEGENDRE 11	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P07204
1103	LEGENDRE HILL	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07193
1104	LEGENDRE 01.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell; Water Source	*Registered Knowledge Holder names available from DPLH	P07194
1105	LEGENDRE 02	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07195
1106	LEGENDRE 03.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	P07196
1109	LEGENDRE 06.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	P07199

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
1110	LEGENDRE 07.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	P07200
1112	LEGENDRE 09.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	P07202
1113	LEGENDRE 10.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Rock Shelter; Shell	*Registered Knowledge Holder names available from DPLH	P07203
5927	WEST INTERCOURSE SCATTER	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07188
5928	WEST INTERCOURSE MOUNDS 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Other	*Registered Knowledge Holder names available from DPLH	P07189
5929	WEST INTERCOURSE MOUNDS 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P07190
5946	WEST INTERCOURSE ISLAND 11	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P07153
5999	WEST INTERCOURSE ISLAND 09.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Water Source	*Registered Knowledge Holder names available from DPLH	P07151
6000	WEST INTERCOURSE ISLAND 10	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07152
6078	ROSEMARY ISLAND 10	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P07019
6079	ENDERBY ISLAND 12	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	P07020
6080	ENDERBY ISLAND 13	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P07021
6081	ENDERBY ISLAND 14	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P07022
6082	ENDERBY ISLAND 15	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P07023
6182	EAST LEWIS ISLAND: SW.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Engraving; Midden	*Registered Knowledge Holder names available from DPLH	P06915
6183	EAST LEWIS ISLAND: NE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Engraving; Grinding areas / Grooves; Quarry	*Registered Knowledge Holder names available from DPLH	P06916
6184	ENDERBY ISLAND 09: SE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Fish Trap; Midden	*Registered Knowledge Holder names available from DPLH	P06917

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6185	ENDERBY ISLAND 10: N.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Engraving; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P06918
6186	ENDERBY ISLAND 11: NE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Ritual / Ceremonial; Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P06919
6187	ANGEL ISLAND: NW.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P06920
6227	MALUS ISLAND.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P06908
6228	WEST LEWIS ISLAND: SW.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Grinding areas / Grooves; Midden; Other; Quarry; Water Source	*Registered Knowledge Holder names available from DPLH	P06909
6229	WEST LEWIS ISLAND: NW ARM 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Ritual / Ceremonial; Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P06910
6230	WEST LEWIS ISLAND: NW ARM 2	Yes	Yes	Yes	Men only	Register	Artefacts / Scatter; Ritual / Ceremonial; Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P06911
6231	WEST LEWIS ISLAND: NE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Fish Trap; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P06912
6232	WEST LEWIS ISLAND: N	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P06913
6233	EAST LEWIS ISLAND: S.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Engraving; Midden	*Registered Knowledge Holder names available from DPLH	P06914
6754	OSPREY BAY 6	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06165
6755	OSPREY BAY INTERDUNAL 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06166
6756	OSPREY BAY INTERDUNAL 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	P06167
6790	YARDIE CREEK SOUTH 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06148
6798	YARDIE INTERDUNAL SWALE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06156

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6799	YARDIE BEACH MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06157
6802	OSPREY BAY 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06160
6803	OSPREY BAY 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06161
6804	OSPREY BAY 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06162
6805	OSPREY BAY 4	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06163
6806	OSPREY BAY 5	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06164
6966	ENDERBY ISLAND 08	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P05955
7055	CONZINC BURIAL & MIDDEN	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05882
7126	MESA CAMP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05792
7127	EAST INTERCOURSE ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P05793
7133	ANGEL ISLAND BEACON	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P05799
7205	TWIN HILL FISHING PLACE.	No	No	No	No Gender / Initiation Restrictions	Register	Hunting Place	*Registered Knowledge Holder names available from DPLH	P05709
7206	WEALJUGOO MIDDEN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Hunting Place; Midden	*Registered Knowledge Holder names available from DPLH	P05710
7254	SANDY BAY NORTH	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05652
7298	YARDIE CREEK ROCKSHELTERS	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P05644
7299	YARDIE CREEK	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05645
7866	EAST LEWIS MIDDEN 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P04966

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7899	MALUS ISLAND	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P04947
7906	DELAMBRE ISLAND SOUTH.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Water Source	*Registered Knowledge Holder names available from DPLH	P04954
7907	ROE POINT, EAST LEWIS	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P04955
7908	EAST LEWIS ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P04956
7910	CONZINC ISLAND 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P04958
7911	CONZINC ISLAND 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	P04959
7914	EAST LEWIS MIDDEN 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P04962
8301	NINGALOO STATION	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P04353
8927	TEN MILE WELL BURIAL	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P03570
9086	MANGROVE SEA	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P03305
9496	THREE TRACKS	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02704
9512	DRD AREA C-14	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving	*Registered Knowledge Holder names available from DPLH	P02665
9515	DRD AREA C-17	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Traditional Structure; Midden; Shell	*Registered Knowledge Holder names available from DPLH	P02668
9517	DRD AREA C-19 (Burrup Peninsula N9)	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Shell	*Registered Knowledge Holder names available from DPLH	P02670
9518	DRD AREA C-20	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02671
9519	DRD AREA C-21	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02672
9523	DRD AREA C-25	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02676

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9524	DRD AREA C-26	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02677
9525	DRD AREA C-27	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02678
9544	DOUBLE J SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02642
9549	GAILS ROCK	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	P02647
9550	COMMODORE ROCKS	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02648
9557	DRD AREA C-04	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02655
9558	DRD AREA C-05	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02656
9560	DRD AREA C-07	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	P02658
9561	LONG KNOLL	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02604
9562	JIMS LOOKOUT	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02605
9563	TEAR DROP	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02606
9564	DRY STREAM CHANNEL	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P02607
9565	CLUSTERED MOTIFS	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02608
9567	FULL CIRCLE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02610
9568	EAGLE ROCK	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02611
9569	ERICS SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02612
9570	OCEAN VIEWS	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02613

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9571	BAYVIEW	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02614
9572	SANDPIT KNOLL	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02615
9573	CLOSE TO THE EDGE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02616
9574	AFTERNOON RESPITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	P02617
9575	BROKEN ROCKS	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02618
9576	CIRCLE KNOLL	No	Yes	No	No Gender / Initiation Restrictions	Register	Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02619
9577	SHARK ROCK	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02620
9578	CAMELOT	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02621
9579	SCREE SLOPE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02622
9580	SCARECROW KNOLL	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02623
9581	CROW KNOLL	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02624
9582	STICK MAN	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02625
9583	GECKO KNOLL	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02626
9585	IN BETWEEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving	*Registered Knowledge Holder names available from DPLH	P02628
9587	LINEAR RIDGE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02630
9588	PEBBLE MOUND SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P02631
9615	WHITE SANDS	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02603

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9636	CLAYPAN SCATTER	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P02569
9637	STORM BEACH	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P02570
9689	ANCIENT CIPHERS	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02510
9735	GIDLEY PASSAGE	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02447
9736	PASTORAL SETTLEMENT	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02448
9737	ENDERBY ISLAND 06: BOILER B	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Quarry	*Registered Knowledge Holder names available from DPLH	P02449
9818	CLIMBING MEN COMPLEX (Burrup Peninsula F1)	Yes	Yes	Yes	Men only	Register	Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02362
9824	DRD AREA C-01	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P02368
9825	DRD AREA C-02	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Midden	*Registered Knowledge Holder names available from DPLH	P02369
9827	DRD AREA A-17	Yes	Yes	Yes	Men only	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02371
9834	FISHING SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P02378
9836	VALLEY VIEW 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02380
9881	BILLY BOILS SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	P02317
9882	FLOTSAM BEACH SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	P02318
9883	PICNIC BEACH	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02319
9884	SOUTH HEADLAND SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02320
9887	TARTARUGA COMPLEX 1 - 11	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02323

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9888	TURTLE SOUP SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P02324
9889	ONE EYED SNAKE SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P02325
10578	DAMPIER ARCHIPELAGO 04	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P01576
10580	DAMPIER ARCHIPELAGO 02	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P01578
10585	DAMPIER ARCHIPELAGO	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P01584
10588	DAMPIER ARCHIPELAGO	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	P01587
10589	DAMPIER ARCHIPELAGO	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P01588
10599	DAMPIER ARCHIPELAGO	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P01598
10602	DAMPIER ARCHIPELAGO	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	P01601
10616	WITHNELL BAY	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P01560
10617	WITHNELL BAY WEST 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P01561
10618	WITHNELL BAY WEST 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P01562
10620	MANGROVE CREEK 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P01565
10621	WITHNELL BAY	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	P01566
10622	WITHNELL BAY	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Midden	*Registered Knowledge Holder names available from DPLH	P01567
11328	GAP WELL	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00836
11458	NINGALOO (near)	No	No	No	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	P00701

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11645	DOLPHIN LOCATION 8 NO. 3	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00509
11646	DOLPHIN LOCATION 8 NO. 1	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00510
11647	DOLPHIN LOCATION 8 NO. 2	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00511
11648	DOLPHIN ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00512
11675	DOLPHIN LOCATION 5 NO. 4	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00487
11683	DOLPHIN LOCATION 5 NO. 1	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00495
11684	DOLPHIN LOCATION 5 NO. 2	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00496
11686	TOZER ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Fish Trap	*Registered Knowledge Holder names available from DPLH	P00498
11698	ANGELA COVE	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving	*Registered Knowledge Holder names available from DPLH	P00457
11699	GIDLEY BAY, GIDLEY ISLAND.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Engraving	*Registered Knowledge Holder names available from DPLH	P00458
11713	LAST ENCOUNTER COVE.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Engraving	*Registered Knowledge Holder names available from DPLH	P00473
11714	GIDLEY ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00474
11715	RIM ROCK GORGE.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Engraving	*Registered Knowledge Holder names available from DPLH	P00475
11724	WITHNELL BAY 09 (Burrup Peninsula M5)	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Midden; Shell	*Registered Knowledge Holder names available from DPLH	P00429
11726	WITHNELL BAY 06	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00431
11727	WITHNELL BAY 07	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00432
11728	WITHNELL BAY 10	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00433

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11729	NGARLUMA POINT, GIDLEY IS.	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P00434
11730	MORS HILL, GIDLEY ISLAND.	No	No	No	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Engraving; Shell	*Registered Knowledge Holder names available from DPLH	P00435
11744	EAST LEWIS 5	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00395
11745	EAST LEWIS 6	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00396
11746	EAST LEWIS 7	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00397
11747	EAST LEWIS 8	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00398
11748	EAST LEWIS 9	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00399
11749	EAST LEWIS 4	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00400
11750	EAST LEWIS 3	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00401
11752	EAST LEWIS 2	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00403
11753	EAST LEWIS 1	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00404
11759	WEST LEWIS ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00410
11767	FISH POINT, GIDLEY ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00418
11768	PHILLIP POINT 2.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Water Source	*Registered Knowledge Holder names available from DPLH	P00419
11771	ENDERBY ISLAND 05	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00368
11772	ROSEMARY ISLAND 09	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P00369
11773	ROSEMARY ISLAND 08	No	No	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Traditional Structure	*Registered Knowledge Holder names available from DPLH	P00370

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11774	ROSEMARY ISLAND 07	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00371
11775	ROSEMARY ISLAND 06	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00372
11776	ROSEMARY ISLAND 04.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Engraving	*Registered Knowledge Holder names available from DPLH	P00373
11777	ROSEMARY ISLAND 03	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00374
11789	ROSEMARY ISLAND 01	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	P00386
11790	WEST INTERCOURSE ISLAND 06	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00387
11791	WEST INTERCOURSE ISLAND 07	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00388
11792	WEST INTERCOURSE ISLAND 02	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00389
11793	WEST INTERCOURSE ISLAND 03	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00390
11794	WEST INTERCOURSE ISLAND 04	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00391
11795	WEST INTERCOURSE ISLAND 05	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00392
11796	WEST INTERCOURSE ISLAND 01	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00393
11797	WEST INTERCOURSE ISLAND 08	No	No	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	P00394
11818	ROSEMARY ISLAND 02	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00362
11819	ROSEMARY ISLAND 05	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00363
11820	ENDERBY ISLAND 01	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00364
11821	ENDERBY ISLAND 02	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P00365

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11822	ENDERBY ISLAND 03	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00366
11823	ENDERBY ISLAND 04	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Midden	*Registered Knowledge Holder names available from DPLH	P00367
12176	IRVINE ISLAND.	No	No	No	No Gender / Initiation Restrictions	Register	Camp	*Registered Knowledge Holder names available from DPLH	K00056
12179	BATHURST ISLAND.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Rock Shelter	*Registered Knowledge Holder names available from DPLH	K00059
12181	UNNAMED ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K00061
12195	WAILALKUNYA, SLATE ISLANDS	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	K00023
12197	LANGGI.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00025
12198	KARIADANG, FRESHWATER COVE	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00026
12199	WODANGU	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Ritual / Ceremonial; Painting	*Registered Knowledge Holder names available from DPLH	K00027
12203	KNDJAL.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Painting; Water Source	*Registered Knowledge Holder names available from DPLH	K00031
12230	BARINBAR, SWAN POINT	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K00005
12231	CYGNET HILL/ONE ARM POINT	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Repository / Storage Place	*Registered Knowledge Holder names available from DPLH	K00006
12232	STORRY HILL	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	K00007
12234	CAPE LEVEQUE	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	K00009
12317	PICKERING POINT.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Hunting Place	*Registered Knowledge Holder names available from DPLH	K03077
12387	BOONGINJ-GOON	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K02850
12388	CULENUGOON BEACH	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K02851

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12389	SWAN POINT ULLULONG GROUND	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K02852
12410	LINTAPITJIN/LOT 2065PORT DR	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Ritual / Ceremonial; Creation / Dreaming Narrative; Midden	*Registered Knowledge Holder names available from DPLH	K02819
12429	GNH LOT 1208	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	K02785
12442	LAW GROUND-YINJALLAN BURU	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K02798
12443	ULLULLONG GROUND-MALAMBUBUR	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K02799
12468	GALYUNGA	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative; Fish Trap	*Registered Knowledge Holder names available from DPLH	K02772
12469	GUNJI CEREMONIAL GROUND	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K02773
12470	GULGUDUNG	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K02774
12471	MARUNGUDA	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K02775
12521	SAVAGE HILL	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02721
12522	ONE MILE CAMP.	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp	*Registered Knowledge Holder names available from DPLH	K02722
12552	CLEMENTSON ST. SITE COMPLEX	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K02700
12590	RED BANK.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Creation / Dreaming Narrative; Fish Trap; Midden	*Registered Knowledge Holder names available from DPLH	K02636
12591	BROOME OLD JETTY.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Ritual / Ceremonial; Creation / Dreaming Narrative; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02637
12658	BRECKNOCK ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02547
12661	DESFONTAINES ISLAND WEST	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02550

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12663	CORONATION ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02552
12677	HEYWOOD ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02566
12685	BUNGARUGUN.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Fish Trap; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02521
12686	ENTRANCE ISLAND.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Camp; Painting	*Registered Knowledge Holder names available from DPLH	K02522
12697	WIBIJAKUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	K02533
12705	BIGGE ISLAND	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K02541
12720	DULI CAVE.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Rock Shelter	*Registered Knowledge Holder names available from DPLH	K02503
12722	DIDJI POINT.	No	No	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02505
12725	DIDJI WELLS.	No	No	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Water Source	*Registered Knowledge Holder names available from DPLH	K02508
12726	CASSINI STONE LINE	No	Yes	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02509
12727	CASSINI STONE CIRCLES	No	No	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02510
12793	UNDANDA.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	K02417
12835	LAMBINJINMAN.	No	No	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	K02405
12838	JILBANUNG.	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Midden	*Registered Knowledge Holder names available from DPLH	K02408
12839	BILLINGURRU.	Yes	Yes	Yes	Men only	Register	Camp; Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K02409
12842	INBALMARRA.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	K02412
12872	GANTHEAUME POINT 2.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K02331

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12873	ENTRANCE POINT/YINARA.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Midden	*Registered Knowledge Holder names available from DPLH	K02332
12875	BARRED CREEK	Yes	No	Yes	Men only	Register	Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K02334
12888	BALJARKURUKUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	K02347
12902	KUNDANDU.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K02308
12903	MURRJAL.	Yes	Yes	Yes	Women only	Register	Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K02309
12904	RURRJAMAN.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Midden; Other; Plant Resource; Water Source	*Registered Knowledge Holder names available from DPLH	K02310
12905	NORTH BARRED CREEK.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02311
12906	WILLIES CREEK COMPLEX.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Hunting Place; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02312
12907	COCONUT WELL 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	K02313
12908	COCONUT WELL 1.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Creation / Dreaming Narrative; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02314
12909	COCONUT WELL ISLAND	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K02315
12910	NORTH CABLE BEACH 6	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	K02316
12911	NORTH CABLE BEACH 5	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K02317
12912	JURLIRR.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Ritual / Ceremonial; Creation / Dreaming Narrative; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K02318

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12913	NORTH CABLE BEACH 4	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	K02319
12914	NORTH CABLE BEACH 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	K02320
12915	NORTH CABLE BEACH 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K02321
12916	NORTH CABLE BEACH 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	K02322
12917	CABLE BEACH 6.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Meeting Place; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02323
12918	CABLE BEACH 4.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K02324
12919	CABLE BEACH 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Other	*Registered Knowledge Holder names available from DPLH	K02325
12920	CABLE BEACH 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Other	*Registered Knowledge Holder names available from DPLH	K02326
12921	MINYIRR.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K02327
12922	JUNGKURR	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Other	*Registered Knowledge Holder names available from DPLH	K02328
12923	NGAKALYALYA	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Other	*Registered Knowledge Holder names available from DPLH	K02329
12924	GANTHEAUME POINT 1	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Creation / Dreaming Narrative; Midden; Other	*Registered Knowledge Holder names available from DPLH	K02330
12944	KURAKARAMUNJUNO 1.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K02298
12945	KURAKARAMUNJUNO 2.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K02299
12946	KURAKARAMUNJUNO 3.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K02300
12947	KURAKARAMUNJUNO 4.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K02301
12948	FLAT ROCK 1.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K02302

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12949	FLAT ROCK 2.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K02303
13014	BARGAJOC SOAK.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Water Source	*Registered Knowledge Holder names available from DPLH	K02206
13015	BARGAJOC DUNES.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K02207
13016	BARGAJOC BURIAL	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K02208
13017	BARGAJOC FISHTRAPS	No	Yes	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	K02209
13032	HIGH CLIFFY IS: SHELTER 1.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Camp; Painting	*Registered Knowledge Holder names available from DPLH	K02172
13033	HIGH CLIFFY IS: STRUCTURE.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Camp; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02173
13034	HIGH CLIFFY IS: OPEN CAMP.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp	*Registered Knowledge Holder names available from DPLH	K02174
13035	HIGH CLIFFY IS: SHELTER 2	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Painting	*Registered Knowledge Holder names available from DPLH	K02175
13036	HIGH CLIFFY IS: SHELTER 3	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K02176
13037	WIDGINGARRI SHELTER 1.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Camp; Traditional Structure; Painting; Rock Shelter	*Registered Knowledge Holder names available from DPLH	K02177
13038	WIDGINGARRI SHELTER 3.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Painting	*Registered Knowledge Holder names available from DPLH	K02179
13039	WIDGINGARRI SHELTER 4.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Painting	*Registered Knowledge Holder names available from DPLH	K02180
13040	WIDGINGARRI SHELTER 5.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Traditional Structure; Painting	*Registered Knowledge Holder names available from DPLH	K02181
13041	WIDGINGARRI SHELTER 6	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K02182
13042	WIDGINGARRI SHELTER 7.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Painting	*Registered Knowledge Holder names available from DPLH	K02183
13044	WIDGINGARRI SHELTER 9.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K02185

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13045	WIDGINGARRI SHELTER 10.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K02186
13046	WIDGINGARRI SHELTER 11.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Camp; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K02187
13047	WIDGINGARRI SHELTER 12.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K02188
13049	WIDGINGARRI SHELTER 14.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Painting	*Registered Knowledge Holder names available from DPLH	K02190
13050	WIDGINGARRI SHELTER 15.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Camp; Rock Shelter	*Registered Knowledge Holder names available from DPLH	K02191
13052	HUNTERS BEACH CEMETERY	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02193
13053	ONE ARM POINT CEMETERY	No	No	No	No Gender / Initiation Restrictions	Register	Burial; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K02194
13054	BARGAJOC NEW SOAK.	No	Yes	No	No Gender / Initiation Restrictions	Register	Water Source	*Registered Knowledge Holder names available from DPLH	K02195
13076	WALMADAN (James Price Point)	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Fish Trap; Hunting Place; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K02164
13302	DOUBTFUL BAY	No	No	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K01909
13306	DJADJUG.	No	No	No	No Gender / Initiation Restrictions	Register	Camp	*Registered Knowledge Holder names available from DPLH	K01913
13307	IRVINE ISLAND: ROCKSHELTER	Yes	No	Yes	Men only	Register	Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K01914
13309	IRVINE ISLAND: BURIAL 1	Yes	No	Yes	Men only	Register	Burial	*Registered Knowledge Holder names available from DPLH	K01916
13310	IRVINE ISLAND: BURIAL 2	Yes	No	Yes	Men only	Register	Burial	*Registered Knowledge Holder names available from DPLH	K01917
13311	WINDJIMIR.	Yes	No	Yes	Men only	Register	Burial; Camp; Water Source	*Registered Knowledge Holder names available from DPLH	K01918
13312	IRVINE ISLAND: STONEMOUND 1	Yes	No	Yes	Men only	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K01919

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13313	IRVINE ISLAND: STONEMOUND 2	Yes	No	Yes	Men only	Register	Burial; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K01920
13314	IRVINE ISLAND: CAMP 1.	Yes	No	Yes	Men only	Register	Camp; Hunting Place	*Registered Knowledge Holder names available from DPLH	K01921
13315	IRVINE ISLAND: CAMP 2.	Yes	No	Yes	Men only	Register	Camp	*Registered Knowledge Holder names available from DPLH	K01922
13316	MAROLORR.	Yes	No	Yes	Men only	Register	Camp	*Registered Knowledge Holder names available from DPLH	K01923
13317	IRVINE ISLAND: MYTH	Yes	No	Yes	Men only	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K01924
13320	WUNDORDA	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Ritual / Ceremonial; Midden	*Registered Knowledge Holder names available from DPLH	K01927
13321	BULGURGUN.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Creation / Dreaming Narrative; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01928
13337	DORNEY ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	K01886
13350	FRAZIER DOWNS BEACH	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	K01902
13351	NGILIRIRRBANJIN	Yes	Yes	Yes	Men only	Register	Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K01903
13373	SUCCESS STRAIT	Yes	No	Yes	Men only	Register	Ritual / Ceremonial; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K01814
13389	IRVINE ISLAND: MIDDEN	No	No	No	No Gender / Initiation Restrictions	Register	Midden; Other	*Registered Knowledge Holder names available from DPLH	K01778
13390	IRVINE ISLAND: BARK BURIAL	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Rock Shelter	*Registered Knowledge Holder names available from DPLH	K01779
13394	MACLEAY ISLANDS 2.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Traditional Structure; Other; Quarry	*Registered Knowledge Holder names available from DPLH	K01783
13397	WALAMAN CREEK	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Midden	*Registered Knowledge Holder names available from DPLH	K01786
13398	TOOKER POINT DUNES 1.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01787
13399	TOOKER POINT DUNES 2.	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp	*Registered Knowledge Holder names available from DPLH	K01788

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13463	WULLULONG GROUND	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Other	*Registered Knowledge Holder names available from DPLH	K01692
13464	WULLULONG GROUND	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register		*Registered Knowledge Holder names available from DPLH	K01693
13465	WIRGANJU GROUND	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register		*Registered Knowledge Holder names available from DPLH	K01694
13466	WONGANIN/BATHURST & IRVINE.	Yes	Yes	Yes	Men only	Register	Burial; Creation / Dreaming Narrative; Hunting Place; Traditional Structure; Other; Plant Resource	*Registered Knowledge Holder names available from DPLH	K01695
13493	ARAIRMA.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	K01667
13497	MALAGUN	No	No	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Fish Trap	*Registered Knowledge Holder names available from DPLH	K01671
13500	LALANAN	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	K01674
13501	NGALANGURU	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Traditional Structure; Quarry	*Registered Knowledge Holder names available from DPLH	K01675
13503	WIRRAR.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01677
13504	KARDILAKAN - JAJAL.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Fish Trap; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K01678
13524	MARDUNGU	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	K01642
13525	KUNMUNYA MISSION 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K01643
13526	KUNMUNYA MISSION 2.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp	*Registered Knowledge Holder names available from DPLH	K01644
13528	YININDIDJA.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry; Water Source	*Registered Knowledge Holder names available from DPLH	K01646
13561	BOWUD.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Hunting Place; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01626
13589	MACLEAY ISLANDS 1	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K01600

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13596	DAVIDSONS POINT	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K01555
13729	RESERVE 21801 BROOME	Yes	No	Yes	Men only	Register	Artefacts / Scatter; Ritual / Ceremonial; Creation / Dreaming Narrative; Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	K01380
13916	NIMLARUN.	No	No	No	No Gender / Initiation Restrictions	Register	Burial; Sub surface cultural material; Artefacts / Scatter; Camp; Midden; Other	*Registered Knowledge Holder names available from DPLH	K01177
13917	GURRUDUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01178
13918	DJEBUNDUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01179
13919	DJILUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Traditional Structure; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01180
13920	GNAMAGUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01181
13921	GARRADARRADUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01182
13922	GIRALGUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01183
13923	NORON.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01184
13925	ILAN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	K01186
13926	ARMANDA.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	K01187
13927	ANBARMAN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	K01188
13928	RANGARD.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01189
13929	LARBUNDUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01190
13930	GUNBUDARUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Traditional Structure; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K01191

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13931	DJUNDJUNBULGUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Camp; Traditional Structure; Midden; Other	*Registered Knowledge Holder names available from DPLH	K01192
13932	MIDALUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Camp; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	K01193
13958	GUMBADAL.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Engraving; Midden	*Registered Knowledge Holder names available from DPLH	K01164
13959	NUMBULMARA.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	K01165
13960	DJUWINO.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01166
13961	MILBANAN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01167
13962	KAYERUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01168
13963	DUMBULGUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01169
13964	LAYUD.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01170
13967	MALINGUN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp	*Registered Knowledge Holder names available from DPLH	K01173
13968	GULDJIMAN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K01174
13969	GULAMANGUN.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden	*Registered Knowledge Holder names available from DPLH	K01175
14240	FISHERMENS BEND 2	No	No	No		Register	Burial; Ritual / Ceremonial; Other	*Registered Knowledge Holder names available from DPLH	K00850
14241	FISHERMENS BEND 3	Yes	Yes	Yes	Men only	Register	Ritual / Ceremonial; Creation / Dreaming Narrative; Other; Repository / Storage Place	*Registered Knowledge Holder names available from DPLH	K00851
14242	FISHERMENS BEND 4	Yes	No	Yes	Men only	Register	Creation / Dreaming Narrative; Other	*Registered Knowledge Holder names available from DPLH	K00852
14243	FISHERMENS BEND 5	Yes	No	Yes	Men only	Register	Creation / Dreaming Narrative; Other	*Registered Knowledge Holder names available from DPLH	K00853
14274	EMERIAU POINT 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00832

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14275	EMERIAU POINT 3	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00833
14276	WEEDONG/ BELL POINT 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00834
14277	WEEDONG/BELL POINT 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00835
14278	WEEDONG/ BELL POINT 3	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00836
14279	WAPET GRAVITY LINE.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Water Source	*Registered Knowledge Holder names available from DPLH	K00837
14282	BOLG/BALK BORE	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	K00840
14283	WEEDONG LAGOON MIDDEN 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00841
14284	WEEDONG LAGOON MIDDEN 2.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	K00842
14285	TAPPERS INLET - INLAND	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	K00843
14286	TAPPERS INLET - COAST	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	K00844
14287	FISHING HUTS MIDDEN 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00845
14288	FISHING HUTS MIDDEN 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00846
14289	EMERIAU POINT FISH TRAP	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	K00847
14291	FISHERMENS BEND 1.	Yes	No	Yes	Men only	Register	Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K00849
14312	CAPE VILLARET	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K00817
14432	CAPE JAUBERT	No	Yes	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	K00650
14433	PORT SMITH.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Camp; Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K00651

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14439	BIDIR-NGA:BA	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Fish Trap	*Registered Knowledge Holder names available from DPLH	K00657
14444	BEACON HILL	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	K00662
14445	CAPE VILLARET BURIAL	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	K00663
14454	CORNEILLE ISLAND 13	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00619
14455	CORNEILLE ISLAND 14	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	K00620
14489	BIDIYANABA FOOTPRINT	No	Yes	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K00589
14505	CORNEILLE ISLAND 1	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	K00551
14506	CORNEILLE ISLAND 2	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	K00552
14507	CORNEILLE ISLAND 3	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	K00553
14508	CORNEILLE ISLAND 4	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Midden; Modified Tree; Other	*Registered Knowledge Holder names available from DPLH	K00554
14509	CORNEILLE ISLAND 5	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Midden; Modified Tree; Other	*Registered Knowledge Holder names available from DPLH	K00555
14510	CORNEILLE ISLAND 6	No	No	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure; Modified Tree; Other	*Registered Knowledge Holder names available from DPLH	K00556
14511	CORNEILLE ISLAND 7	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	K00557
14512	CORNEILLE ISLAND 8	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	K00558
14513	CORNEILLE ISLAND 9	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Midden; Other	*Registered Knowledge Holder names available from DPLH	K00559
14514	CORNEILLE ISLAND 10	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	K00560
14515	CORNEILLE ISLAND 11/KUMBURR	No	No	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K00561

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14516	CORNEILLE ISLAND 12	No	No	No	No Gender / Initiation Restrictions	Register	Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00562
14552	PARRY ISLAND CROCODILE.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00545
14553	PARRY ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00546
14556	NGAMILI, CONDILLAC ISLAND	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K00549
14557	CABLE BEACH 5.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Hunting Place; Midden; Other	*Registered Knowledge Holder names available from DPLH	K00497
14560	TITIRRKUN/KENNEDY HILL.	Yes	Yes	Yes	Men only	Register	Artefacts / Scatter; Ritual / Ceremonial; Creation / Dreaming Narrative; Grinding areas / Grooves; Hunting Place; Midden; Other; Water Source	*Registered Knowledge Holder names available from DPLH	K00500
14561	SACRED STORES/ BROOME	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Repository / Storage Place	*Registered Knowledge Holder names available from DPLH	K00501
14609	CABLE BEACH 3.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Midden; Other	*Registered Knowledge Holder names available from DPLH	K00496
14665	LOMBADINA MISSION	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Ritual / Ceremonial	*Registered Knowledge Holder names available from DPLH	K00396
14684	BORGORON.	Yes	Yes	Yes	Men only	Register	Artefacts / Scatter; Ritual / Ceremonial; Other; Repository / Storage Place	*Registered Knowledge Holder names available from DPLH	K00415
14698	TAPPERS POINT.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp	*Registered Knowledge Holder names available from DPLH	K00376
14699	MURPHY CREEK	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	K00377
14700	IMBALGUN, TAPPERS INLET.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Fish Trap; Midden	*Registered Knowledge Holder names available from DPLH	K00378
14701	MIDHREGUN	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	K00379
14703	WEEDONG	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap; Other	*Registered Knowledge Holder names available from DPLH	K00381

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14818	PARRY ISLAND,ADMIRLTY GULF.	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Painting	*Registered Knowledge Holder names available from DPLH	K00234
14890	GARA, MERMAID IS.	No	Yes	No	No Gender / Initiation Restrictions	Register	Other; Painting	*Registered Knowledge Holder names available from DPLH	K00090
14891	SWAN POINT.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Creation / Dreaming Narrative; Hunting Place; Traditional Structure; Midden	*Registered Knowledge Holder names available from DPLH	K00091
14893	LINBINGUN.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Engraving	*Registered Knowledge Holder names available from DPLH	K00093
14928	CORONATION ISLANDS	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00130
14929	ALBERT ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	K00131
14930	SOUTH MARET ISLAND	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00132
14932	FEINT ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K00134
14933	BIGGE ISLAND	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Painting	*Registered Knowledge Holder names available from DPLH	K00135
14934	WEST MONTALIVET ISLAND	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Traditional Structure; Painting	*Registered Knowledge Holder names available from DPLH	K00136
14935	PRUDHOE ISLAND.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative; Engraving; Hunting Place	*Registered Knowledge Holder names available from DPLH	K00137
14936	EAST MONTALIVET ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00138
14937	EAST MONTALIVET ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00139
14938	WOLLASTON ISLAND.	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00140
14939	KATERS ISLAND	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	K00141
14940	CAPE VOLTAIRE	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00142

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14971	BADANBIRI CLIFFS	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K00173
14973	DIDJINA	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative; Engraving; Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00175
14975	GUBARO REEF	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	K00177
14976	MONTGOMERY ISLANDS	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Creation / Dreaming Narrative; Traditional Structure; Painting	*Registered Knowledge Holder names available from DPLH	K00178
14977	CHAMPAGNY ISLANDS	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Painting	*Registered Knowledge Holder names available from DPLH	K00179
14979	BYAM MARTIN ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	K00181
14980	DECEPTION BAY	No	No	No	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K00182
14981	KURI BAY	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00183
14982	AUGUSTUS ISLAND 1	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00184
14983	AUGUSTUS ISLAND 2	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	K00185
14986	PIRIALLU, ROGERS STRAIT	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Painting	*Registered Knowledge Holder names available from DPLH	K00188
14987	PIRIALLU, PORT GEORGE IV	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Ritual / Ceremonial; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00189
14988	MINGGOONYA, PORT GEORGE IV.	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Meeting Place; Painting	*Registered Knowledge Holder names available from DPLH	K00190
14989	JACKSON ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Painting	*Registered Knowledge Holder names available from DPLH	K00191
14990	PALEED-PALEERA	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative; Painting	*Registered Knowledge Holder names available from DPLH	K00192
14991	LIRIJA	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K00193
14992	KOON-GURUM	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Modified Tree; Painting	*Registered Knowledge Holder names available from DPLH	K00194

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14994	LUSHINGTON VALLEY	No	No	No	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K00196
14995	HANOVER BAY 1	No	No	No	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K00197
14996	HANOVER BAY 2	No	No	No	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	K00198
15141	LOMBADINA	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	K02917
15726	EAST INTERCOURSE ISLAND 01	Yes	Yes	Yes	Men only	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P07942
15727	EAST INTERCOURSE ISLAND 02	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P07943
15728	EAST INTERCOURSE ISLAND 03	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	P07944
16215	North West Intercourse Island Site 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Other	*Registered Knowledge Holder names available from DPLH	
16216	North West Intercourse Island Site 13	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Shell	*Registered Knowledge Holder names available from DPLH	
16217	North West Intercourse Island Site 36	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Other; Shell	*Registered Knowledge Holder names available from DPLH	
16218	North West Intercourse Island Site 181	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Landscape / Seascape Feature; Other; Shell	*Registered Knowledge Holder names available from DPLH	
16219	North West Intercourse Island Site 96	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Other; Shell	*Registered Knowledge Holder names available from DPLH	
16220	North West Intercourse Island Site 84	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Landscape / Seascape Feature; Other	*Registered Knowledge Holder names available from DPLH	
16229	West Mid Intercourse Island Site 16	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16230	South West Burrup Peninsula Site 63	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Other; Shell	*Registered Knowledge Holder names available from DPLH	
16234	North West Intercourse Island Site 134	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Landscape / Seascape Feature; Shell	*Registered Knowledge Holder names available from DPLH	

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16235	North West Intercourse Island Site 4	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Shell	*Registered Knowledge Holder names available from DPLH	
16237	North West Intercourse Island Site 83	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16239	North West Intercourse Island Site 69	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16240	North West Intercourse Island Site 16	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16241	North West Intercourse Island Site 123	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Other; Quarry	*Registered Knowledge Holder names available from DPLH	
16247	North West Intercourse Island Site 13	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Shell	*Registered Knowledge Holder names available from DPLH	
16249	North West Intercourse Island Site 19	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16251	North West Intercourse Island Site 59	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Other; Quarry; Rock Shelter; Shell	*Registered Knowledge Holder names available from DPLH	
16252	North West Intercourse Island Site 8	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Other; Quarry	*Registered Knowledge Holder names available from DPLH	
16255	North West Intercourse Island Site 197	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16256	North West Intercourse Island Site 119	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16263	North West Intercourse Island Site 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16267	North West Intercourse Island Site 10	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16268	North West Intercourse Island Site 11	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16269	North West Intercourse Island Site 12	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16270	North West Intercourse Island Site 14	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	

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16271	North West Intercourse Island Site 15	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16274	North West Intercourse Island Site 44	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16277	North West Intercourse Island Site 20	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16279	North West Intercourse Island Site 22	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16281	North West Intercourse Island Site 24	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16282	North West Intercourse Island Site 25	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16283	North West Intercourse Island Site 26	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16286	North West Intercourse Island Site 29	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16287	North West Intercourse Island Site 30	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16288	North West Intercourse Island Site 31	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16289	North West Intercourse Island Site 32	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16290	North West Intercourse Island Site 33	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16291	North West Intercourse Island Site 34	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16295	North West Intercourse Island Site 39	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16296	North West Intercourse Island Site 40	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16297	North West Intercourse Island Site 41	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16299	North West Intercourse Island Site 43	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	

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16302	North West Intercourse Island Site 47	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16304	North West Intercourse Island Site 49	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Shell	*Registered Knowledge Holder names available from DPLH	
16305	North West Intercourse Island Site 50	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Landscape / Seascape Feature; Shell	*Registered Knowledge Holder names available from DPLH	
16306	North West Intercourse Island Site 51	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Other; Shell	*Registered Knowledge Holder names available from DPLH	
16312	North West Intercourse Island Site 57	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16314	North West Intercourse Island Site 60	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Other	*Registered Knowledge Holder names available from DPLH	
16317	North West Intercourse Island Site 63	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Shell	*Registered Knowledge Holder names available from DPLH	
16320	North West Intercourse Island Site 66	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Landscape / Seascape Feature; Other	*Registered Knowledge Holder names available from DPLH	
16321	North West Intercourse Island Site 67	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16322	North West Intercourse Island Site 68	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16326	North West Intercourse Island Site 74	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Landscape / Seascape Feature; Other; Quarry	*Registered Knowledge Holder names available from DPLH	
16331	North West Intercourse Island Site 79	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16332	North West Intercourse Island Site 80	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16333	North West Intercourse Island Site 81	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16334	North West Intercourse Island Site 82	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16335	North West Intercourse Island Site 85	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	

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16336	North West Intercourse Island Site 86	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Landscape / Seascape Feature; Other; Quarry	*Registered Knowledge Holder names available from DPLH	
16337	North West Intercourse Island Site 87	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16338	North West Intercourse Island Site 88	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16345	North West Intercourse Island Site 95	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Landscape / Seascape Feature; Other	*Registered Knowledge Holder names available from DPLH	
16346	North West Intercourse Island Site 97	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16349	North West Intercourse Island Site 100	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16351	North West Intercourse Island Site 102	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Landscape / Seascape Feature; Other; Shell	*Registered Knowledge Holder names available from DPLH	
16353	North West Intercourse Island Site 104	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16354	North West Intercourse Island Site 105	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Shell	*Registered Knowledge Holder names available from DPLH	
16356	North West Intercourse Island Site 107	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Other; Quarry	*Registered Knowledge Holder names available from DPLH	
16357	North West Intercourse Island Site 108	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16358	North West Intercourse Island Site 109	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Landscape / Seascape Feature; Other	*Registered Knowledge Holder names available from DPLH	
16359	North West Intercourse Island Site 110	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Shell	*Registered Knowledge Holder names available from DPLH	
16360	North West Intercourse Island Site 111	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16361	North West Intercourse Island Site 112	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Other; Shell	*Registered Knowledge Holder names available from DPLH	

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16362	North West Intercourse Island Site 113	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16363	North West Intercourse Island Site 114	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Other; Shell	*Registered Knowledge Holder names available from DPLH	
16372	North West Intercourse Island Site 124	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16375	North West Intercourse Island Site 127	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16377	North West Intercourse Island Site 129	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16400	North West Intercourse Island Site 160	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16402	North West Intercourse Island Site 162	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16403	North West Intercourse Island Site 163	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16408	North West Intercourse Island Site 168	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16409	North West Intercourse Island Site 169	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16410	North West Intercourse Island Site 170	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16411	North West Intercourse Island Site 171	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16412	North West Intercourse Island Site 172	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16413	North West Intercourse Island Site 173	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16414	North West Intercourse Island Site 174	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16415	North West Intercourse Island Site 175	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16418	North West Intercourse Island Site 178	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	

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16420	North West Intercourse Island Site 180	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16422	North West Intercourse Island Site 183	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16423	North West Intercourse Island Site 184	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16424	North West Intercourse Island Site 185	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16425	North West Intercourse Island Site 186	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving	*Registered Knowledge Holder names available from DPLH	
16426	North West Intercourse Island Site 187	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16428	North West Intercourse Island Site 189	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16429	North West Intercourse Island Site 190	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16430	North West Intercourse Island Site 191	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16431	North West Intercourse Island Site 192	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16435	North West Intercourse Island Site 196	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16436	North West Intercourse Island Site 198	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16437	North West Intercourse Island Site 199	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16438	North West Intercourse Island Site 200	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Landscape / Seascape Feature	*Registered Knowledge Holder names available from DPLH	
16439	North West Intercourse Island Site 201	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Landscape / Seascape Feature; Other	*Registered Knowledge Holder names available from DPLH	
16440	North West Intercourse Island Site 202	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16441	North West Intercourse Island Site 203	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	

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List of Aboriginal Cultural Heritage (ACH) Register

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
16444	North West Intercourse Island Site 206	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16445	West Mid Intercourse Island Site 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16446	West Mid Intercourse Island Site 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden; Other; Quarry; Shell	*Registered Knowledge Holder names available from DPLH	
16447	West Mid Intercourse Island Site 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves; Other; Quarry	*Registered Knowledge Holder names available from DPLH	
16449	West Mid Intercourse Island Site 5	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16450	West Mid Intercourse Island Site 6	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16451	West Mid Intercourse Island Site 7	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16452	West Mid Intercourse Island Site 8	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16453	West Mid Intercourse Island Site 10	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16455	West Mid Intercourse Island Site 12	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16456	West Mid Intercourse Island Site 13	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16458	West Mid Intercourse Island Site 17	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16459	West Mid Intercourse Island Site 18	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
16460	West Mid Intercourse Island Site 19	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16461	West Mid Intercourse Island Site 20	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16463	West Mid Intercourse Island Site 22	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
16597	Baler Bluff	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Shell	*Registered Knowledge Holder names available from DPLH	

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
16709	Hidden Island Burial Site	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	
17043	Limbingoon	Yes	Yes	Yes	Men only	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
17132	Yardugarra Site	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Creation / Dreaming Narrative; Water Source	*Registered Knowledge Holder names available from DPLH	
17193	Ningaloo Station	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	
17568	CAPE VILLARET AREA 03 / HOMESTEAD SITE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Other	*Registered Knowledge Holder names available from DPLH	
17569	CAPE VILLARET AREA 04	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Midden; Other	*Registered Knowledge Holder names available from DPLH	
17570	CAPE VILLARET AREA 05	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Other; Rock Shelter	*Registered Knowledge Holder names available from DPLH	
17571	CAPE VILLARET AREA 06	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden; Other; Rock Shelter	*Registered Knowledge Holder names available from DPLH	
17572	CAPE VILLARET AREA 07 / BARNES BEACH MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Other	*Registered Knowledge Holder names available from DPLH	
17573	CAPE VILLARET AREA 08	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Midden; Ochre	*Registered Knowledge Holder names available from DPLH	
17574	CAPE VILLARET AREA 09	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
17577	CAPE VILLARET AREA 12	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Other	*Registered Knowledge Holder names available from DPLH	
17578	CAPE VILLARET AREA 13	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	
17579	CAPE VILLARET AREA 14	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Midden; Other	*Registered Knowledge Holder names available from DPLH	
17580	CAPE VILLARET AREA 15	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Midden; Other	*Registered Knowledge Holder names available from DPLH	
17640	West Intercourse Island	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
17826	Boomerang Bay Site 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
17851	BALDWIN CREEK	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	
17853	JOOMONYOON / EASTON POINT	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	
17855	ARDNOGOON / SHENTON BLUFF	No	No	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	
17857	MANGINGOOR / ELEPHANT POINT	No	Yes	No	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	
17859	NILIL / RUMBLE BAY	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Fish Trap	*Registered Knowledge Holder names available from DPLH	
17918	Yardoogarra Reburial	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	
18819	Cape Preston 16	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
18822	Cape Preston 19	No	Yes	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	
18823	Cape Preston 20	No	Yes	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	
18824	Cape Preston 21	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
18825	Cape Preston 22	No	Yes	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	
18826	Cape Preston 23	No	Yes	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	
18827	Cape Preston 24	No	Yes	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	
18828	Cape Preston 25	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
18829	Cape Preston 26	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	
18858	Cape Preston 55	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Midden	*Registered Knowledge Holder names available from DPLH	
18859	Cape Preston 56	No	Yes	No	No Gender / Initiation Restrictions	Register	Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
18860	Cape Preston 57	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
18861	Cape Preston 58	No	Yes	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	
18862	Cape Preston 59	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
18863	Cape Preston 60	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
18864	Cape Preston 61	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Grinding areas / Grooves; Midden	*Registered Knowledge Holder names available from DPLH	
18865	Cape Preston 62	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
18866	Cape Preston 63	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
19298	Cape Preston Soak	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Creation / Dreaming Narrative; Historical; Midden; Water Source	*Registered Knowledge Holder names available from DPLH	
19648	Woodside Extension Area 31	Yes	No	Yes	Men only	Register	Engraving; Repository / Storage Place	*Registered Knowledge Holder names available from DPLH	
19677	Woodside Extension Area 64	No	Yes	No	No Gender / Initiation Restrictions	Register	Grinding areas / Grooves	*Registered Knowledge Holder names available from DPLH	
20250	Norman Creek Luggers Camp	No	Yes	No	No Gender / Initiation Restrictions	Register	Historical	*Registered Knowledge Holder names available from DPLH	
20252	SPB27 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
20253	SPB26 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
20254	SPB25 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
20255	SPB24 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
20256	SPB23 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
20257	SPB21 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
20258	SPB20 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
20259	SPB17 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Historical	*Registered Knowledge Holder names available from DPLH	
20260	SPB18 - Sandy Point Burial	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Burial; Midden	*Registered Knowledge Holder names available from DPLH	
20288	Sunday Island Mission Cemeteries	No	No	No	No Gender / Initiation Restrictions	Register	Burial; Historical	*Registered Knowledge Holder names available from DPLH	
21312	Woodside Extension Area 62	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Midden	*Registered Knowledge Holder names available from DPLH	
21408	Broome Crocodile Farm	Yes	Yes	Yes	Men only	Register	Camp; Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	
23203	PE 6 Access Gully	Yes	No	Yes	Men only	Register	Ritual / Ceremonial; Engraving; Water Source	*Registered Knowledge Holder names available from DPLH	
24575	Irvine Island Ledge Burial	Yes	No	Yes	Men only	Register	Burial; Rock Shelter	*Registered Knowledge Holder names available from DPLH	
24759	Striated Stone (Stone in the valley)	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
25586	WE023 (BMIEA)	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Engraving	*Registered Knowledge Holder names available from DPLH	
25853	P08 - 01	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	
25858	ICC 08-01	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Midden; Quarry	*Registered Knowledge Holder names available from DPLH	
25859	ICC 08-02	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25860	ICC 08-03	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving	*Registered Knowledge Holder names available from DPLH	
25861	ICC 08-04	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving	*Registered Knowledge Holder names available from DPLH	
25862	ICC 08-05	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Traditional Structure; Quarry	*Registered Knowledge Holder names available from DPLH	
25863	ICC 08-06	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Other; Quarry	*Registered Knowledge Holder names available from DPLH	

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
25864	ICC 08-07	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
25866	ICC 08-09	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving	*Registered Knowledge Holder names available from DPLH	
25867	ICC 08-10	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
25868	ICC 08-14	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Quarry; Shell	*Registered Knowledge Holder names available from DPLH	
25869	ICC 08-17	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
25910	AA08 - 02	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	
25913	AA08 - 05	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	
25914	AA08 - 06	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
25915	AA08 - 07	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25917	AA08 - 09	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25918	AA08 - 10	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25919	AA08 - 11	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	
25920	AA08 - 12	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25923	AA08 - 15	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25924	AA08 - 16	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25925	AA08 - 17	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	
25927	AA08 - 19	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
25928	AA08 - 20	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	
25931	EU-IC-Q 0802	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
25932	EU-IC-Q 0803	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
25933	EU-IC-Q 0804	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
25934	EU-IC-Q 0805	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
25936	EU-IC-A 0807	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25937	EU-IC-A 0808	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
25943	EU-IC-M 0828	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
25986	Site No 4	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
25995	Site No 17	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
26000	Site No 23	No	Yes	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
26005	Site No. 18	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
26006	Site No. 25	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	
26017	P08 - 02	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Midden; Quarry; Shell	*Registered Knowledge Holder names available from DPLH	
26019	P08 - 08	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
26020	P08 - 09	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
26441	P09 - 01	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Shell	*Registered Knowledge Holder names available from DPLH	

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
26444	P09 - 04	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
26446	P09 - 06	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Quarry	*Registered Knowledge Holder names available from DPLH	
26736	ACHM - 09-05	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
32447	Gardalargun South	No	Yes	No	No Gender / Initiation Restrictions	Register		*Registered Knowledge Holder names available from DPLH	
32659	Maitland River Scatter 11	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
32661	Maitland River Scatter 13	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
32662	Maitland River Scatter 14	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
32666	Maitland River Scatter 06	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
32667	Maitland River Scatter 10	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
32668	Maitland River Scatter 09	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
32670	Maitland River Scatter 07	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
34016	IOHENG07	No	Yes	No		Register	Artefacts / Scatter; Engraving; Grinding areas / Grooves; Quarry	*Registered Knowledge Holder names available from DPLH	
36532	Djarindjin Law Ground	Yes	Yes	Yes	Men only	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	
38533	Cape Bruguieres Channel	No	Yes	No		Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	

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Map of Aboriginal Cultural Heritage (ACH) Register

Search Criteria

728 Aboriginal Cultural Heritage (ACH) Register in Shapefile - 20240612 NRC Advertising EMBA/NRCAdvertisingEMBA_GDA94, 20240612 NRC Consultation EMBA/NRCConsultationEMBA_GDA94, 20240612 NRC Ecological EMBA/NRCEcologicalEMBA_GDA94, 20240612 NRC Ops Area/NRCOpsArea_GDA94, 20240612 NRC Socio-Cultural EMBA/NRCSocioCulturalEMBA_GDA94. Warning: Search area complex so results may be inaccurate. Contact DPLH for assistance.

Disclaimer

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the *Aboriginal Heritage Act 1972*.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you provide the details to the Department via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form and we will make every effort to rectify it as soon as possible.

Copyright

Coordinates

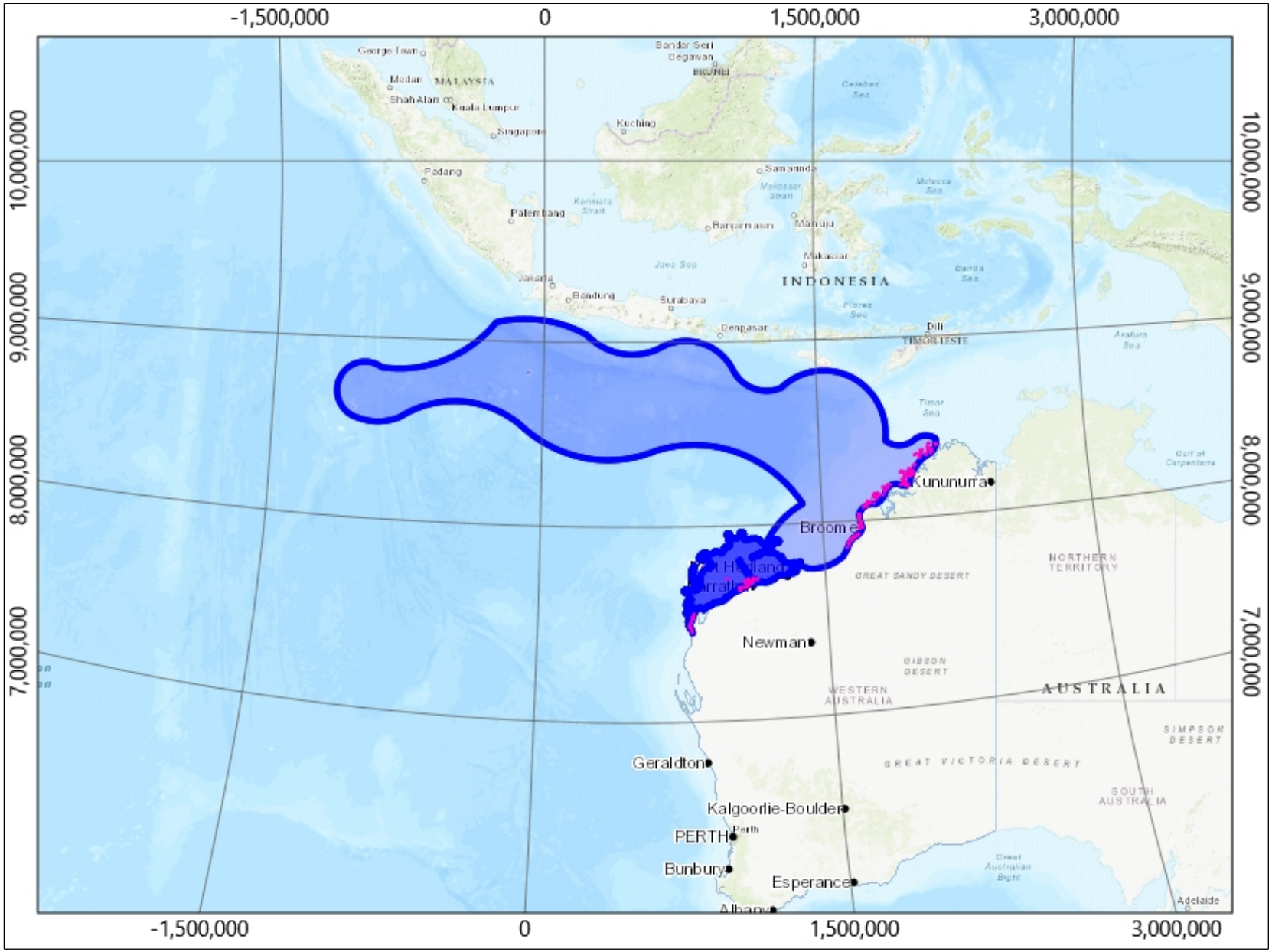
Map coordinates (MGA Zone 49 Easting/Northing metres) are based on the GDA 94 Datum.

Basemap Copyright

Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Register



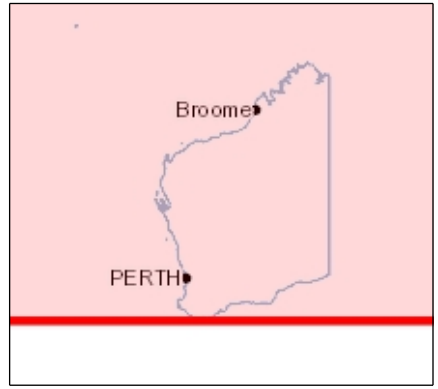
Legend

- Aboriginal Cultural Heritage (ACH) Register
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

1,064.43 kilometres

Map Scale 1 : 32,260,000

MGA Zone 49 (GDA94)



APPENDIX D: OIL SPILL PREPAREDNESS AND RESPONSE MITIGATION ASSESSMENT

Oil Spill Preparedness and Response Mitigation Assessment for North Rankin Complex Facility Operations

Corporate HSE

Hydrocarbon Spill Preparedness

August 2024
Revision 1a

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EXECUTIVE SUMMARY

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the North Rankin Complex Facility Operations, hereafter known as the Petroleum Activities Program (PAP).

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to As Low as Reasonably Practicable (ALARP) and an acceptable level. It achieves this by evaluating response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the Environment Plan (EP). This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness.

A summary of the key facts and references to additional detail within this document are presented below.

Table 0-1: Summary of the key details for assessment

Key details of assessment	Summary	Reference to additional detail
Worst Case Credible Scenario	**Major Environment Event-01 (MEE-01)[1]:** 77-day Surface release of Perseus Condensate due to a well loss of containment from PEN05 well at 19° 35' 3.23" S, 116° 08' 17.06'E. 19,863 m^3 over 77 days of Perseus Condensate. 0.6% residual component of 119.2 m^3	Section 2.2
	MEE-02: 16-hour Subsea release of 6371 m^3 of a subsea equipment loss of containment of GWA Export Condensate at 29.89 km of TL2 Export Pipeline from shore at 20° 20' 20.426''S, 116° 43' 54.310''E. Instantaneous release of 6371 m^3 of GWA Export Condensate. 2.3 % residual component of 146.5 m^3	
	MEE-05: Loss of vessel separation at the PLA platform at 19° 59' 46.5" S, 115° 22' 5.6" E[2]. Instantaneous release of 1000 m^3 of Marine Gas Oil. 5 % residual component of 50 m^3	
Hydrocarbon Properties	**Perseus Condensate** Perseus Condensate contains a relatively low proportion (~0.6% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds are expected to persist in the marine environment. The unweathered mixture has a dynamic viscosity of 0.55 cP. The pour point of the whole oil (<20 °C) confirms that it will remain in a liquid state over the annual temperature range observed on the North West Shelf. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. In general, about 80.5% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 12.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 6.1% should evaporate over several days (265 °C < BP < 380 °C). Approximately 0.6% of the oil is shown to be persistent. The aromatic content of the oil is approximately 12.5%.	Section 6.7.2 of the EP Appendix A of the First Strike Plan

[1] The subsea Persephone wells have been excluded from this scenario as these subsea wells exhibit water inflow and outflow dynamics. Consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well.

[2] Modelling for a release of 1000 m^3 Marine Gas Oil was available within Pluto Facility Operations, 83 km closer to shore than the Operational Area for this activity. It was originally undertaken in 2024 using NOPSEMA's contemporary modelling thresholds. The worst-case scenario for this category remains unchanged at approximately 1000 m^3 due to the rupture of a vessel wing tank, which is the same modelled volume for the PLA Facility (1000 m^3). Given that spill parameters and geographic location fall within the envelope of the existing modelling, it is an appropriate surrogate and therefore additional modelling was not required.

<table>
<tr><td></td><td colspan="4">GWA Export Condensate

GWA Export Condensate contains a relatively high proportion (~2.3% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds are expected to persist in the marine environment. The unweathered mixture has a dynamic viscosity of 0.765cP. The pour point of the whole oil (<20 °C) confirms that it will remain in a liquid state over the annual temperature range observed on the North West Shelf. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere.

GWA Export Condensate is made of high proportions of highly volatile hydrocarbons. In general, about 61.2% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 23.7% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 12.7% should evaporate over several days (265 °C < BP < 380 °C). Approximately 2.3% of the oil is shown to be persistent. The aromatic content of the oil is approximately 16.3%.</td><td></td></tr>
<tr><td></td><td colspan="4">Marine Gas Oil (MGO)

MGO is typically classed as an International Tanker Owners Federation (ITOPF) Group I/II oil. Group I oils are non-persistent and tend to dissipate completely through evaporation within a few hours and do not normally form emulsions.

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 34.6% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 54.4% should evaporate over several days (265 °C < BP < 380 °C). Approximately 5% of the oil is shown to be persistent.</td><td></td></tr>
<tr><td>Modelling Results</td><td colspan="4">Stochastic modelling

A quantitative, stochastic assessment has been undertaken for credible spill scenarios to help assess the environmental risk of a hydrocarbon spill.

A total of 100 replicate simulations was completed for MEE-01, and 200 replicate simulations for MEE-02 and MEE-05,to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter.</td><td>Section 2.3</td></tr>
<tr><td></td><td colspan="4">Deterministic modelling

Deterministic modelling was then undertaken for scenarios MEE-01 and MEE-02 as the worst-case credible scenarios (WCCS) to establish the following for response planning purposes:

• Minimum time to commencement of oil accumulation at any shoreline receptor (at a threshold of 100 g/m^2)
• Maximum cumulative oil volume accumulated at any individual shoreline receptor (at concentrations in excess of 100 g/m^2)
• Maximum cumulative oil volume accumulated across all shoreline receptors (at concentrations in excess of 100 g/m^2)</td><td></td></tr>
<tr><td></td><td></td><td>MEE-01: Surface hydrocarbon well loss of containment of 19,863 m^3 of Perseus Condensate over 77 days</td><td>MEE-02: Subsea hydrocarbon release from a loss of containment of 6371 m^3 of GWA Export Condensate over 16 hours</td><td>MEE-05: Instantaneous release of 1000 m^3 MGO due to loss of vessel separation (from stochastic modelling)</td><td></td></tr>
<tr><td></td><td>Minimum time to floating hydrocarbon contact with the offshore edge(s)</td><td>No contact</td><td>0.2 days to Dampier Archipelago (Quarter 1, Run 48)</td><td>1 hour at Montebello MP</td><td></td></tr>
</table>

	of any shoreline receptor polygon (at a concentration of 10 g/m^2)				
	Minimum time to shoreline contact (above 100 g/m^2)	32.8 days to Clerke Reef (Rowley Shoals MP) and Bedwell Island (Quarter 1, Run 13)	0.6 days to Dampier Archipelago, Keast Island and Legendre Island. (Quarter 1, Run 48)	No contact	
	Largest volume ashore at any single Response Protection Area (RPA) (above 100 g/m^2)	8 m^3 at Exmouth Coastline including Ningaloo Coast WH, and Ningaloo MP (State). (Quarter 4, Run 23)	325 m^3 at Dampier Archipelago (Quarter 1, Run 26)	No contact	
	Largest total shoreline accumulation (above 100 g/m^2) all shorelines	8 m^3	674 m^3	No contact	
	Minimum time to entrained hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	No contact	6 hours Dampier Archipelago	1 hour at Montebello MP	
Net Environmental Benefit Analysis	Operational monitoring, source control, shoreline protection and deflection, shoreline clean-up, oiled wildlife response, are all identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment.				Section 4
ALARP evaluation of selected response techniques	The evaluation of the selected response techniques shows the proposed controls reduced the risk to an ALARP and aacceptable 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 North Rankin Complex Facility Operations, hereafter known as the PAP. This document outlines Woodside's decisions and techniques for responding to a hydrocarbon loss of containment event and the process for determining its level of hydrocarbon spill preparedness.

1.2 Purpose

This document, together with the documents listed below, meet the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulations) relating to hydrocarbon spill response arrangements.

- The North Rankin Complex Facility Operations Environment Plan (EP)
- Oil Pollution Emergency Arrangements (OPEA) (Australia)
- The North Rankin Complex Facility Operations Oil Pollution Emergency Plan (OPEP) including:
  - Oil Pollution First Strike Plan (FSP)
  - Relevant Operations Plans
  - Relevant Tactical Response Plans (TRPs)
  - Relevant Supporting Plans
  - Data Directory.

1.3 Scope

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to ALARP and to an acceptable level. It achieves this by evaluating response options to address the potential environmental risks and impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP. This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness. It should be read in conjunction with the documents listed in Table 1-1. The location of the PAP is shown in Figure 3-1 of the EP.

1.4 Oil spill response document overview

The documents outlined in Table 1-1 and Figure 1-1 are collectively used to manage the preparedness and response for a hydrocarbon release.

The Oil Pollution First Strike Plan (FSP) contains a pre-operational Net Environmental Benefit Analysis (NEBA) summary, outlining the selected response techniques for this PAP. Relevant Operational Plans to be initiated for associated response techniques are identified in the FSP and relevant forms to initiate a response are appended to the FSP.

The process to develop an Incident Action Plan (IAP) begins once the oil pollution FSP is underway. The IAP includes inputs from the Operational Monitoring operations and the operational NEBA (Section 4). Planning, coordination and resource management are initiated by the Corporate Incident Management Team (CIMT). In some instances, technical specialists may be utilised to provide expert advice. The planning may also involve liaison officers from supporting government agencies.

During each operational period, field reports are continually reviewed to evaluate the effectiveness of response operations. In addition, the operational NEBA is continually reviewed and updated to confirm the response techniques implemented continue to result in a net environmental benefit (Section 4).

The response will continue as described in Section 5 until the response termination criteria have been met.

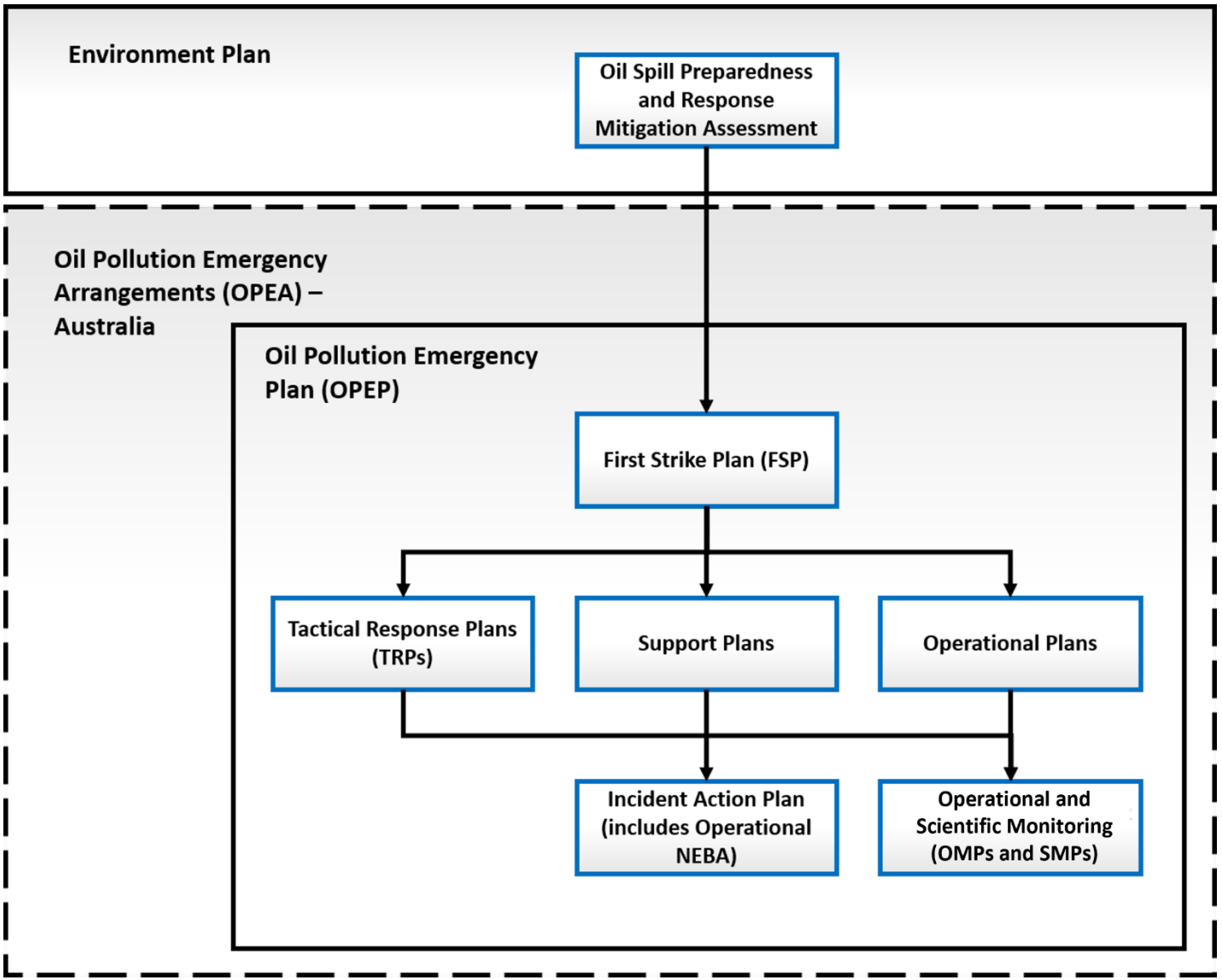

Figure 1-1: Woodside hydrocarbon spill document structure

Table 1-1: Hydrocarbon Spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
North Rankin Complex Facility Operations Environment Plan (EP)	Demonstrates that potential adverse impacts on the environment associated with the North Rankin Complex Facility Operations (during both routine and non-routine operations) are mitigated and managed to As Low As Reasonably Practicable (ALARP) and will be of an acceptable level.	NOPSEMA Woodside internal	EP Section 4 (Identification and evaluation of environmental risks and impacts, including credible spill scenarios) EP Section 6 (Performance outcomes, standards and measurement criteria) EP Section 7 (Implementation strategy – including emergency preparedness and response, and Reporting and compliance)	
Oil Pollution Emergency Arrangements (OPEA) Australia	Describes the arrangements and processes adopted by Woodside when responding to a hydrocarbon spill from a petroleum activity.	Regulatory agencies Woodside internal	All	
Oil Spill Preparedness and Response Mitigation Assessment for the North Rankin Complex Facility Operations (this document)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP.	Regulatory agencies Corporate Incident Management Team (CIMT): Control function in an ongoing spill response for activity-specific response information.	All Performance outcomes, standards and measurement criteria related to hydrocarbon spill preparedness and response are included in this document.	
North Rankin Complex Facility Operations Oil Pollution First Strike Plan	Facility specific document providing details and tasks required to mobilise a first strike response. Primarily applied to the first 24 hours of a response until a full Incident Action Plan (IAP) specific to the event is developed. Oil Pollution First Strike Plans are intended to be the first document used to provide immediate guidance to the responding	Site-based IMT for initial response, activation and notification. CIMT for initial response, activation and notification. CIMT: Control function in an ongoing spill response for activity-specific response information.	Initial notifications and reporting required within the first 24 hours of a spill event. Relevant spill response options that could be initiated for mobilisation in the event of a spill. Recommended pre-planned tactics. Details and forms for use in immediate response. Activation process for oil spill trajectory	

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
	Incident Management Team (IMT).		modelling, aerial surveillance and oil spill tracking buoy details.	
Operational Plans	Lists the actions required to activate, mobilise and deploy personnel and resources to commence response operations. Includes details on access to equipment and personnel (available immediately) and steps to mobilise additional resources depending on the nature and scale of a release. Relevant operational plans will be initially selected based on the Oil Pollution First Strike Plan; additional operational plans will be activated depending on the nature and scale of the release.	CIMT: Operations and Logistics Sections for first strike activities. CIMT: Planning Section to help inform the IAP on resources available.	Locations from where resources may be mobilised. How resources will be mobilised. Details of where resources may be mobilised to and what facilities are required once the resources arrive. Details on how to implement resources to undertake a response.	Operational Monitoring Plan Source Control Emergency Response Planning Guideline Vessel Shipboard Oil Pollution Emergency Plan (SOPEP) Shoreline Protection and Deflection Shoreline clean up Oiled Wildlife Response Operational and Scientific Monitoring
Tactical Response Plans	Provides options for response techniques in selected RPAs. Provides site, access and deployment information to support a response at the location.	CIMT: Planning Section to help develop IAPs, and Logistics Section to assist with determining resources required.	Indicative response techniques. Access requirements and/or permissions. Relevant information for undertaking a response at that site. Where applicable, may include equipment deployment locations and site layouts.	For full list of relevant Tactical Plans for the North Rankin Complex Facility Operations oil spill response, refer to ANNEX D: Tactical Response Plans (TRP).
Support Plans	Support Plans detail Woodside's approach to resourcing and the provision of services during a hydrocarbon spill response.	CIMT: Operations, Logistics and Planning Sections.	Technique for mobilising and managing additional resources outside of Woodside's immediate preparedness arrangements.	Logistics Support Plan Aviation Support Plan Marine Support Plan Accommodation & Catering Plan – Australia Transport Management Plan – Australia

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
				Waste Management Plan – Australia Health and Safety Support Plan Hydrocarbon Spill Responder Health Monitoring Guidelines People and Global Capability (Surge Labour Requirements) Support Plan (Land Based) Security Support Plan Stakeholder Engagement Support Plan Guidance for Hydrocarbon Spill Claims Management Communications Support Plan – Australia

2 RESPONSE PLANNING PROCESS

This document details Woodside's process for identifying potential response options for the hydrocarbon release scenarios, identified in the EP. Figure 2-1 outlines the interaction between Woodside's response, planning, preparedness and selection process.

This structure has been used because it shows how the planning and preparedness activities inform a response and provides indicative guidance on what activities would be undertaken, in sequential order, if a real event were to occur. The process also evaluates alternative, additional and/or improved control measures specific to the PAP.

The North Rankin Complex Facility Operations Oil Pollution First Strike Plan (FSP) then summarises the outcome of the response planning process and provides initial response guidance and a summary of ongoing response activities if an incident were to occur.

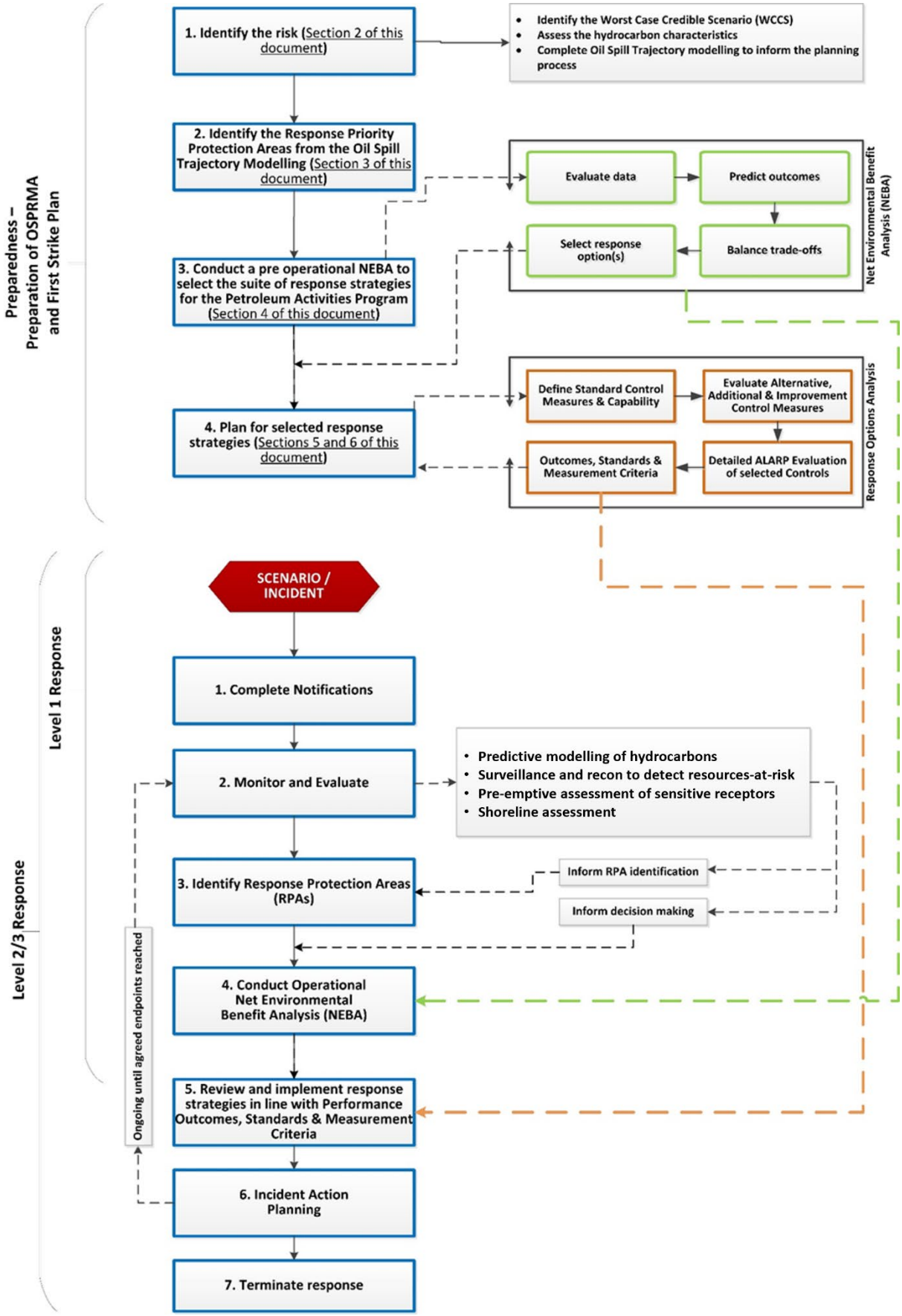

Figure 2-1: Response planning and selection process

2.1 Response planning process outline

This document is expanded below to provide additional context on the key steps in determining capability, evaluating ALARP and hydrocarbon spill response requirements.

Section 1. INTRODUCTION

Section 2. RESPONSE PLANNING PROCESS

- identification of worst-case credible scenario(s) (WCCS)
- spill modelling for WCCS.

Section 3. IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

- areas predicted to be contacted at concentration >100 g/m^2.

Section 4. NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

- pre-operational NEBA (during planning/ALARP evaluation): this must be reviewed during the initial response to an incident to confirm its accuracy
- selected response techniques prioritised and carried forward for ALARP assessment.

Section 5. HYDROCARBON SPILL ALARP PROCESS

- determines the response need based on predicted consequence parameters.
- details the environmental performance of the selected response options based on need.
- sets the environmental performance outcomes, environmental performance standards and measurement criteria.

Section 6. ALARP EVALUATION

- evaluates alternative, additional, and improved options for each response technique to demonstrate the risk has been reduced to ALARP.
- provides a detailed ALARP assessment of selected control measure options against:
  - predicted cost associated with implementing the option
  - predicted change to environmental benefit
  - predicted effectiveness / feasibility of the control measure.

Section 7. ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

- evaluation of impacts and risks from implementing selected response options.

Section 8. ALARP CONCLUSION

Section 9. ACCEPTABILITY CONCLUSION

2.1.1 Response Planning Assumptions

Figure 2-2 illustrates the initial steps of a response to an oil spill event and, where available, the indicative timing. For the latter stages, the timing will be specific to the selective response option.

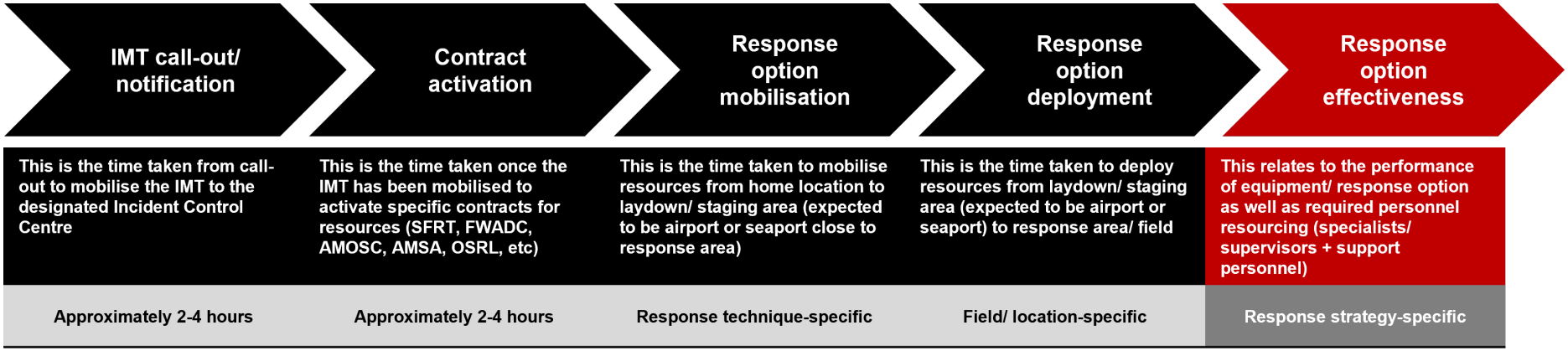

Figure 2-2: Response planning assumption – timing, resourcing and effectiveness

2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP have been identified during the risk assessment process (Section 6.7 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. Six unplanned events or credible spill scenarios for the PAP have been selected as representative across types, sources and incident/response levels, up to and including the WCCS.

Table 2-1 presents the credible scenarios for the PAP. The WCCS for the activity is then used for response planning purposes, as all other scenarios are of a lesser scale and extent. By demonstrating capability to manage the response to the WCCS, Woodside assumes other scenarios that are smaller in nature and scale can also be managed by the same capability. Response performance measures have been defined based on a response to the WCCS.

A 77-day surface release of 19,863 m^3 of Perseus Condensate due to a loss of well containment (LOWC) from the PEN05 well (MEE-01) has been modelled and is considered for response planning purposes. The release volumes and residual hydrocarbon components are small for the North Rankin Complex Facility Operations surface release, which leads to most of the condensate evaporating within the first few days of the release. There is minimal shoreline contact predicted from this scenario due to the hydrocarbon components and the release occurring offshore away from sensitive shoreline receptors.

A 16-hour subsea release of 6371 m^3 due to a subsea equipment loss of containment of GWA Export Condensate from the export pipeline at the state boundary (MEE-02) has been modelled and is also considered for response planning purposes. Although the release volumes are smaller for the subsea release than the surface release (MEE-01), the proximity of <30 km to the shoreline and the residual hydrocarbon component is higher, which leads to a larger volume of shoreline accumulation and shorter time to shoreline contact. Due to the larger shoreline loading for MEE-02, 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)
Credible Spill Scenario-01 – MEE-01[3]		Yes	77-day Surface release of 19,863 m^3 of Perseus Condensate due to a well loss of containment from PEN05 well	77-day Surface release of 19,863 m^3 of Perseus Condensate	3	Perseus Condensate	0.6%	119.2
Credible Spill Scenario-02	**MEE-02 (WCCS)**	No	14-hour Subsea release of 6259 m^3 from a subsea equipment loss of containment of GWA Export Condensate at mid-point of TL2 export pipeline between NRC and KGP	14-hour Subsea release of 6259 m^3 of GWA Condensate	3	GWA Export Condensate	2.3%	144
Credible Spill Scenario-03		Yes	16-hour Subsea release of 6371 m^3 from a subsea equipment loss of containment of GWA Export Condensate at 29.89 km of TL2 export pipeline from shore	16-hour Subsea release of 6371 m^3 of GWA Export	3	GWA Export Condensate	2.3%	146.5
MEE-03		No	Instantaneous release of 276 m^3 condensate or 440 m^3 MGO resulting from a topsides loss of containment	*Not modelled as the scenario is within the envelope of the other credible scenarios.*				
MEE-04		No	Loss of structural integrity resulting in loss of containment per MEE-01, MEE-02, MEE-03 or MEE-05	*Not modelled as the scenario is within the envelope of the other credible scenarios.*				
Credible Spill Scenario -05 – MEE-05		No	Loss of vessel containment at the PLA platform, releasing 1000 m^3 of Marine Gas Oil (MGO) over 1 hour	1000 m^3 of Marine Gas Oil (MGO) over 1 hour [4]	2	Marine Gas Oil	5.0	50
MEE-06		No	Hydrocarbon release resulting from loss of control of suspended load from platform	*Not modelled as the scenario is within the envelope of the other credible scenarios.*				

[3] The subsea Persephone wells have been excluded from this scenario as these subsea wells exhibit water inflow and outflow dynamics. Consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well.

[4] Modelling for a release of 1000 m^3 Marine Gas Oil was available within Pluto Facility Operations, 83 km closer to shore than the Operational Area for this activity. It was originally undertaken in 2024 using NOPSEMA's contemporary modelling thresholds. The worst-case scenario for this category remains unchanged at approximately 1000 m^3 due to the rupture of a vessel wing tank, which is the same modelled volume for the PLA Facility (1000 m^3). Given that spill parameters and geographic location fall within the envelope of the existing modelling, it is an appropriate surrogate and therefore additional modelling was not required.

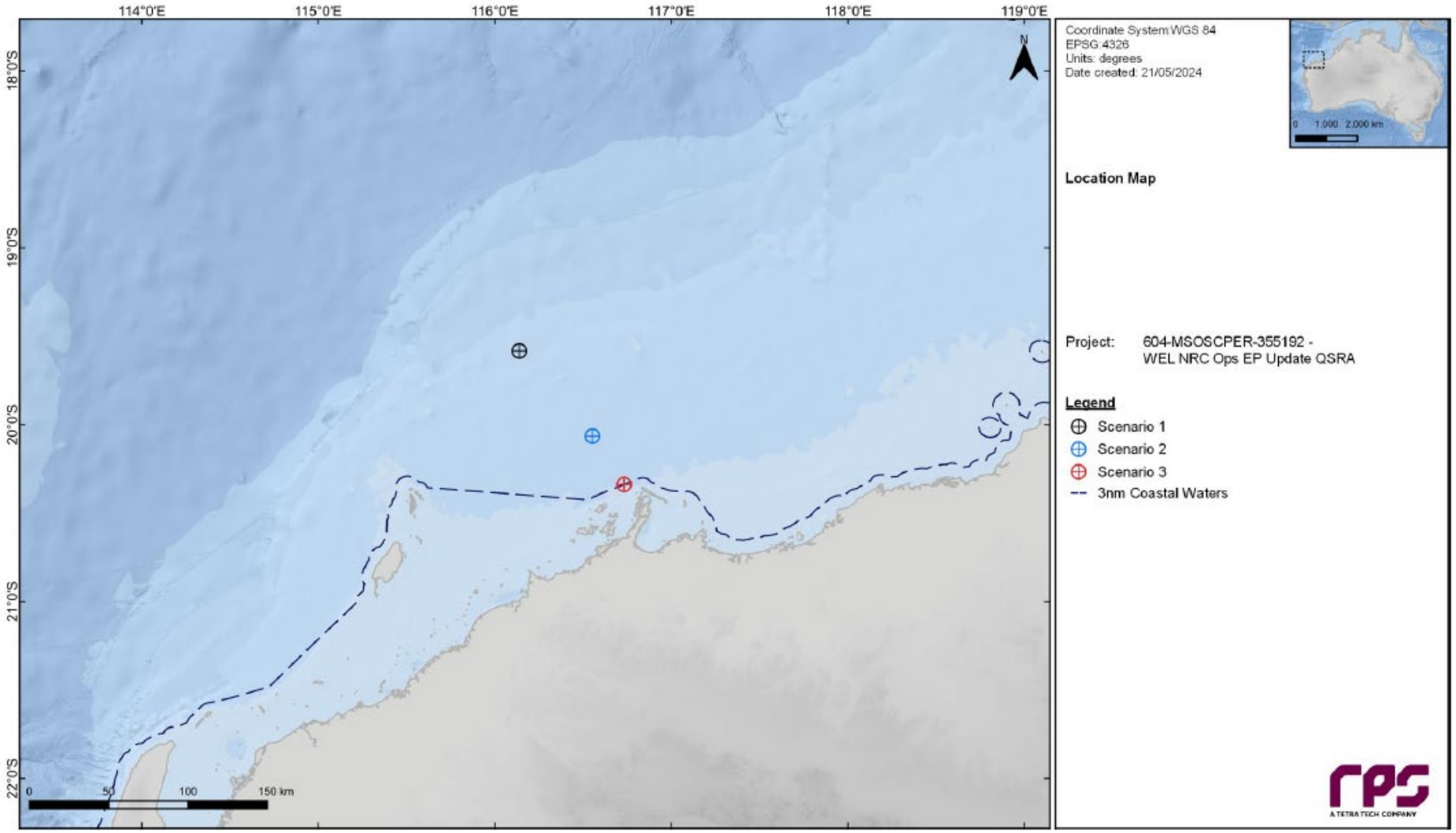

Figure 2-3: Release location of Scenario 1 (MEE-01), Scenario 2 (MEE-02) and Scenario 3 (MEE-02). Source RPS, 2024.

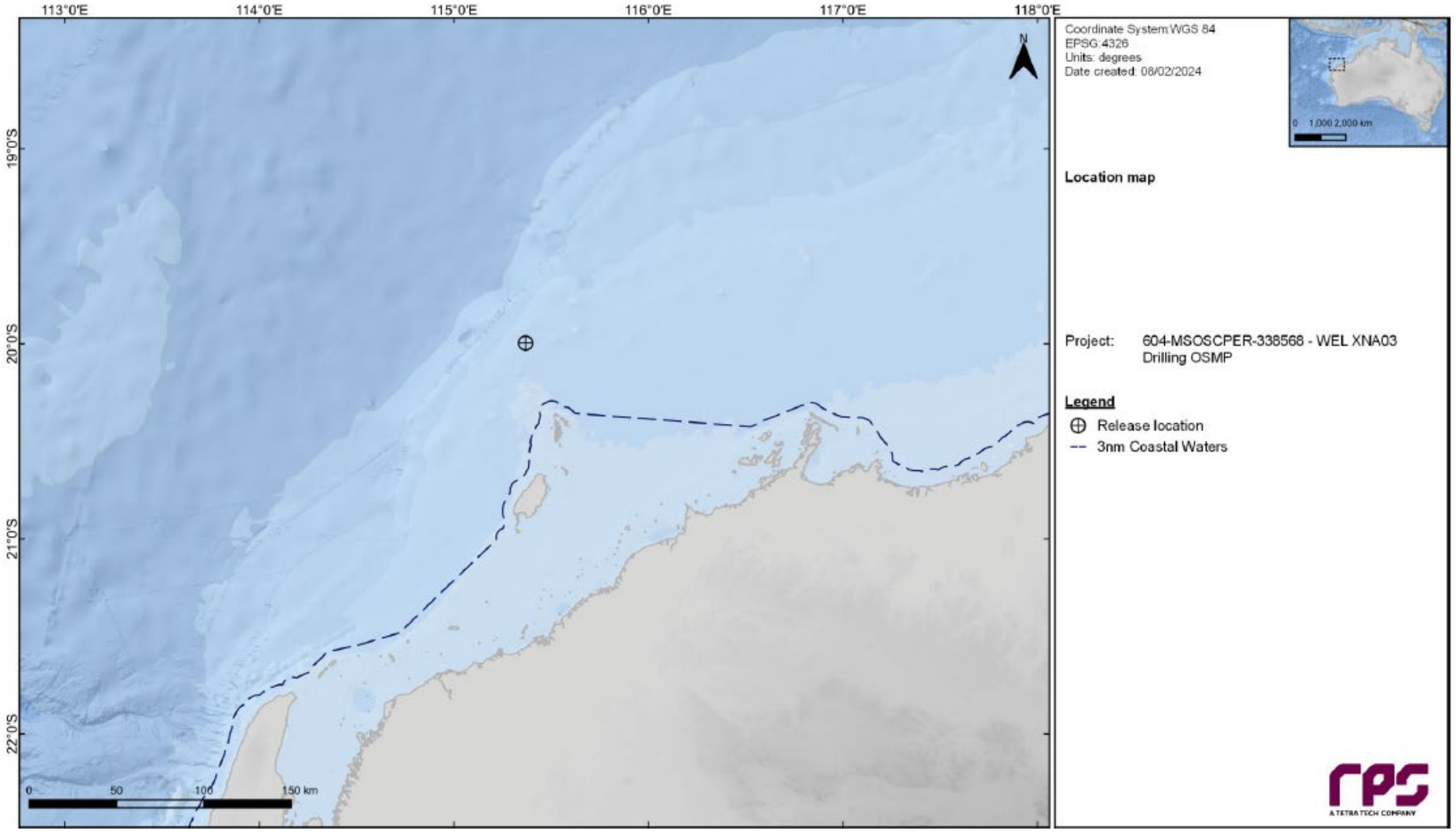

Figure 2-4: Release location of Scenario 5 (MEE-05). Source RPS, 2024.

2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6.7.2 of the EP.

Perseus Condensate

Perseus Condensate contains a relatively low proportion (~0.6% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds are expected to persist in the marine environment. The unweathered mixture has a dynamic viscosity of 0.55cP. The pour point of the whole oil (<20 °C) confirms that it will remain in a liquid state over the annual temperature range observed on the North West Shelf. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere.

In general, about 80.5% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 12.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 6.1% should evaporate over several days (265 °C < BP < 380 °C). Approximately 0.6% of the oil is shown to be persistent. The aromatic content of the oil is approximately 12.5%.

GWA Export Condensate

GWA Export Condensate contains a relatively high proportion (~2.3% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds are expected to persist in the marine environment. The unweathered mixture has a dynamic viscosity of 0.765cP. The pour point of the whole oil (<20 °C) confirms that it will remain in a liquid state over the annual temperature range observed on the North West Shelf. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere.

GWA Export Condensate is made of high proportions of highly volatile hydrocarbons. In general, about 61.2% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 23.7% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 12.7% should evaporate over several days (265 °C < BP < 380 °C). Approximately 2.3% of the oil is shown to be persistent. The aromatic content of the oil is approximately 16.3%.

Marine Diesel Oil

Marine Diesel Oil (MDO) is typically classed as an International Tanker Owners Pollution Federation (ITOPF) Group I/II oil. Group I oils are non-persistent and tend to dissipate completely through evaporation within a few hours and do not normally form emulsions.

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 34.6% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 54.4% should evaporate over several days (265 °C < BP < 380 °C). Approximately 5% of the oil is shown to be persistent. It is predicted only 50m3 of product would remain after several days from the bunkering scenario and there is no predicted shoreline contact or accumulation.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling (OSTM) tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (SIMAP) models are both used for stochastic and deterministic trajectory modelling. They have been developed over three decades of planning, exercises, actual responses, several peer reviews, and validation studies. OILMAP was originally derived from the United States Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Type A model (French et al. 1996), for assessing marine transport, biological impact and economic damage that was also used under the United States Oil Pollution Act 1990 Natural Resource Damage Assessment (NRDA) regulations. Notable spills where the model has been used and validated against actual field observations include, Exxon Valdez (French McCay 2004), North Cape Oil Spill (French McCay 2003), along with an assessment of 20 other spills (French McCay and Rowe, 2004). In addition, test spills designed to verify fate, weathering and movement algorithms have been conducted regularly and in a

range of climate conditions (French and Rines 1997; French et al. 1997; Payne et al. 2007; French McCay et al. 2007).

Further to this, the algorithms have been updated using the latest findings from the Macondo/Deepwater Horizon well blowout in the Gulf of Mexico and validated according to the Deepwater Horizon (DWH) oil spill in support of the NRDA (Spaulding et al. 2015; French McCay et al. 2015, 2016). Finally, the OILMAP and SIMAP models have been used extensively in Australia to prosecute pollution offences, predict discharge locations and likely spill volumes based on weathering and surveillance observations, and has been used as expert witness evidence in Australian court proceedings, aiding the prosecution to determine spill quantum estimates.

2.3.1 Stochastic modelling

Quantitative, stochastic assessments have been undertaken for the credible spill scenarios (refer to Table 2-1) to help assess the environmental consequences of a hydrocarbon spill.

A total of 100 replicate simulations were completed for MEE-01, and 200 replicate simulations for MEE-02 and MEE-05, 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. 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. Smaller cell sizes have been considered but would not change the response need as the potential distance between cells would not allow multiple cells to be treated per day by response operations. Additionally, a 1 km^2 cell is expected to allow averaging of threshold concentrations and mass across the spatial extent to represent a conservative approach (patches of oil and windrows) to response planning that simulates operational monitoring feedback in a real event.

Deterministic modelling was carried out on MEE-01 and MEE-02 as the WCCSs and used for response planning purposes. A sample of the deterministic results is provided below as an indication of the data format and content.

- Column A and B provide the latitude and longitude of the cell
- Column C is the elapsed time since the release occurred

- Column D represents the average concentration across the cell in g/m2
- Column E represents the viscosity of the hydrocarbon in centistokes (cSt) at sea surface temperature
- Column F and G represents the mass of hydrocarbon across the entire cell in kg and tons respectively.

Table 2-3: Example Deterministic modelling data

Latitude	Longitude	Time_hour	Conc_gm^2	Visc_cSt	Mass_kg	Mass_tons
A	B	C	D	E	F	G
-19.711226	115.814366	6	6.413877	81.007389	6429.693282	6.413877
-19.702194	115.814366	6	1.740181	81.300190	1744.571745	1.740181
-19.720258	115.823922	6	1.869578	76.440503	1874.078751	1.869578
-19.711226	115.823922	6	51.471109	80.668490	51597.969472	51.471109
-19.702194	115.823922	6	4.734574	80.068396	4746.515274	4.734574
-19.720258	115.833477	6	4.879617	58.780817	4891.356945	4.879617
-19.711226	115.833477	6	36.161301	70.992921	36250.382543	36.161301

The deterministic modelling data provides an indication of the response need by displaying the potential surface area and volume treated or recovered by response operations. Existing capability is reviewed to approximate the surface area and volumes that can be treated or removed and a range of alternate, improved and additional options to reduce risks and impacts to ALARP are considered.

Woodside recognises no single response technique will treat all available subsea or surface oil and a combination of response techniques will be required for the identified scenario. Even with the significant resources available to Woodside through existing capability and third-party resources, the primary offshore response techniques of surface dispersant application and containment and recovery will only treat or recover a minor proportion (<30%) of the available surface hydrocarbons based on previous response experience.

Woodside is committed to a realistic, scalable response capability commensurate to the level of risk and able to be practically implemented and feasibly sustained.

2.3.3 Response planning thresholds for surface and shoreline hydrocarbon exposure

Thresholds to determine the EMBA are used to predict and assess environmental impacts and inform the operational and scientific monitoring (OSM) program, however they do not appropriately represent the thresholds at which an effective response can be implemented. Additional response thresholds are used for response planning and to determine areas where response techniques would be most effective. The deterministic modelling is then used to assess the nature and scale of a response.

In the event of an actual response, existing deterministic modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform IMT decisions.

The deterministic spill modelling outputs are presented at response planning thresholds for surface hydrocarbons for the WCCS. Surface spill concentrations are expressed as grams per square metre (g/m^2) (Section 2.2). The thresholds used are derived from oil spill response planning literature and industry guidance and are summarised below.

2.3.3.1 Surface hydrocarbon concentrations

Table 2-4: Surface hydrocarbon thresholds for response planning

Surface hydrocarbon threshold (g/m^2)	Description	Bonn Agreement Oil Appearance Code	Mass per area (m^3/km^2)
>10	Predicted minimum threshold for commencing operational monitoring[5]	Code 3 – Dull metallic colours	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [6]	Code 4 – Discontinuous true oil colour	50 to 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon threshold (g/m^2)	**Description**	**National Plan Guidance on Oil Contaminated Foreshores**	**Mass per area (m^3/km^2)**
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations	Stain	>100
250	Predicted minimum threshold for commencing shoreline clean-up operations	Level 3 – Thin Coating	200 to 1000

The surface thickness of oil at which dispersants are typically effective is approximately 100 g/m^2. However, substantial variations occur in the thickness of the oil within the slick, and most fresh crude oils spread within a few hours, so overall the average thickness is 0.1 mm (or approx. 100 g/m^2 ITOPF 2011). Additionally, the recommended rate of application for surface dispersant is typically one part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to calculate a litres/hectare application rate from vessels and aircraft. In practice this can be difficult to achieve as it is not possible to accurately assess the thickness of the floating oil.

Some degree of localised over-dosage and under-dosage is inevitable in dispersant response. An average oil layer thickness of 0.1 mm is often assumed, although the actual thickness can vary over a wide range (from less than 0.0001 mm to more than 1 mm) over short distances (International Petroleum Industry Environment Conservation Association [IPIECA] 2015).

Guidance from the Australian Maritime Safety Authority (AMSA, 2020) indicates spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

Further guidance from the European Maritime Safety Authority (EMSA) states spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx. 5 – 50 µm) with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant. Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

[5] 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.

[6] 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.

Guidance from NOAA in the United States is found in the document: *Characteristics of Response Strategies: A Guide for Spill Response Planning in Marine Environments 2013 (NOAA 2013).* This guide outlines advice for response planning across all common techniques, including surface dispersant spraying and containment and recovery. It states oil thickness can vary by orders of magnitude within distinct areas of a slick, thus the actual slick thickness and oil distribution of target areas are crucial for determining response method feasibility. Further to this, ITOPF also states in terms of oil spill response, sheen can be disregarded as it represents a negligible quantity of oil, cannot be recovered or otherwise dealt with to a significant degree by existing response techniques, and is likely to dissipate readily and naturally (ITOPF, 2014a, 2014b).

Figure 2-5 below from AMSA's Identification of Oil on Water – Aerial Observation and Identification Guide (AMSA, 2014) shows expected percent coverage of surface hydrocarbons as a proportion of total surface area. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

From this information and other relevant sources (Allen and Dale, 1996, EMSA, 2012, Spence, 2018) the surface threshold of 50 g/m^2 was chosen as an average/equilibrium thickness for offshore response operations (50 g/m^2 is an average of 50% coverage of 0.1 mm Bonn Agreement Code 4 – discontinuous true oil colour, or 25% coverage of 0.2 mm Bonn Agreement Code 5 – continuous true oil colour which would represent small patches of thick oil or wind-rows).

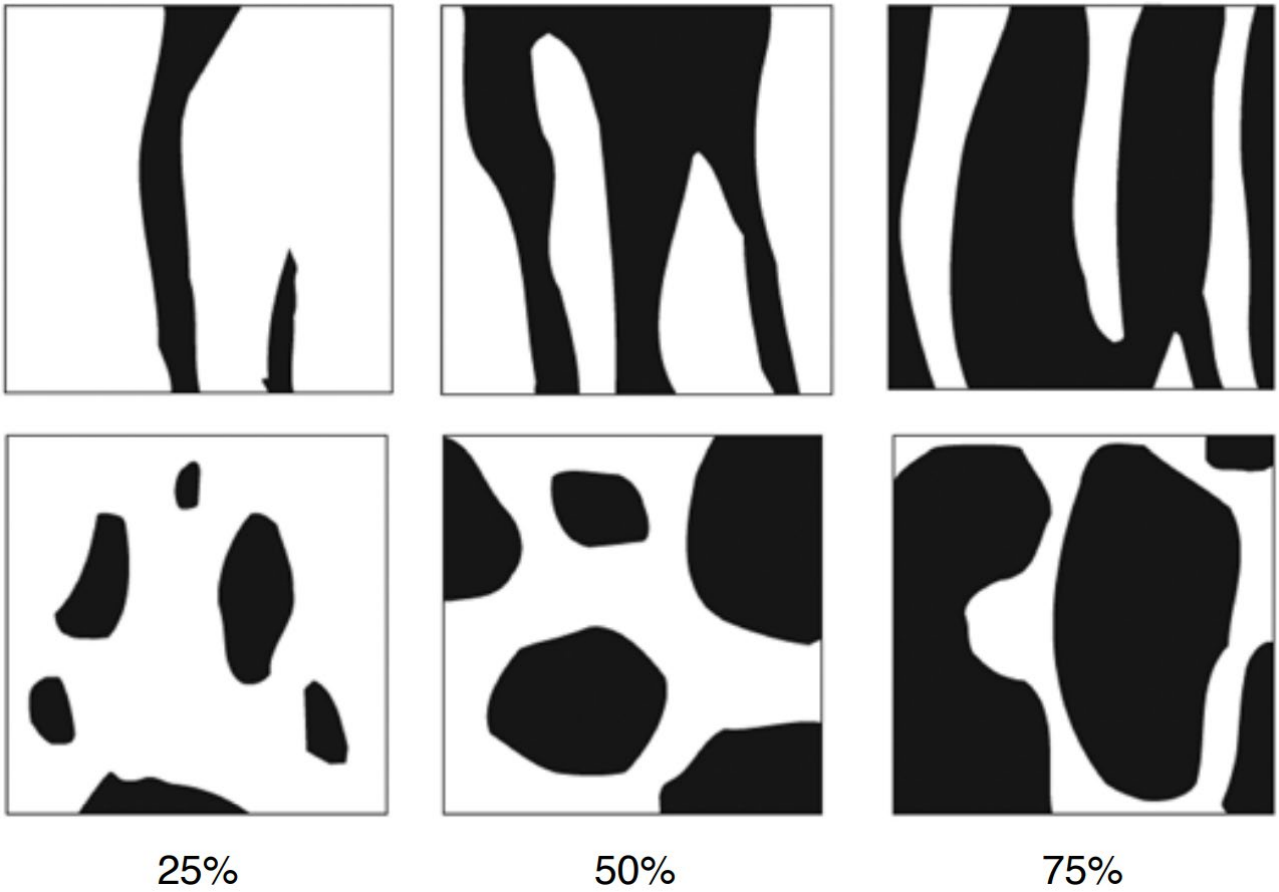

Figure 2-5: Proportion of total area coverage (AMSA, 2014)

Figure 2-6 illustrates the general relationships between on-water response techniques and slick thickness. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

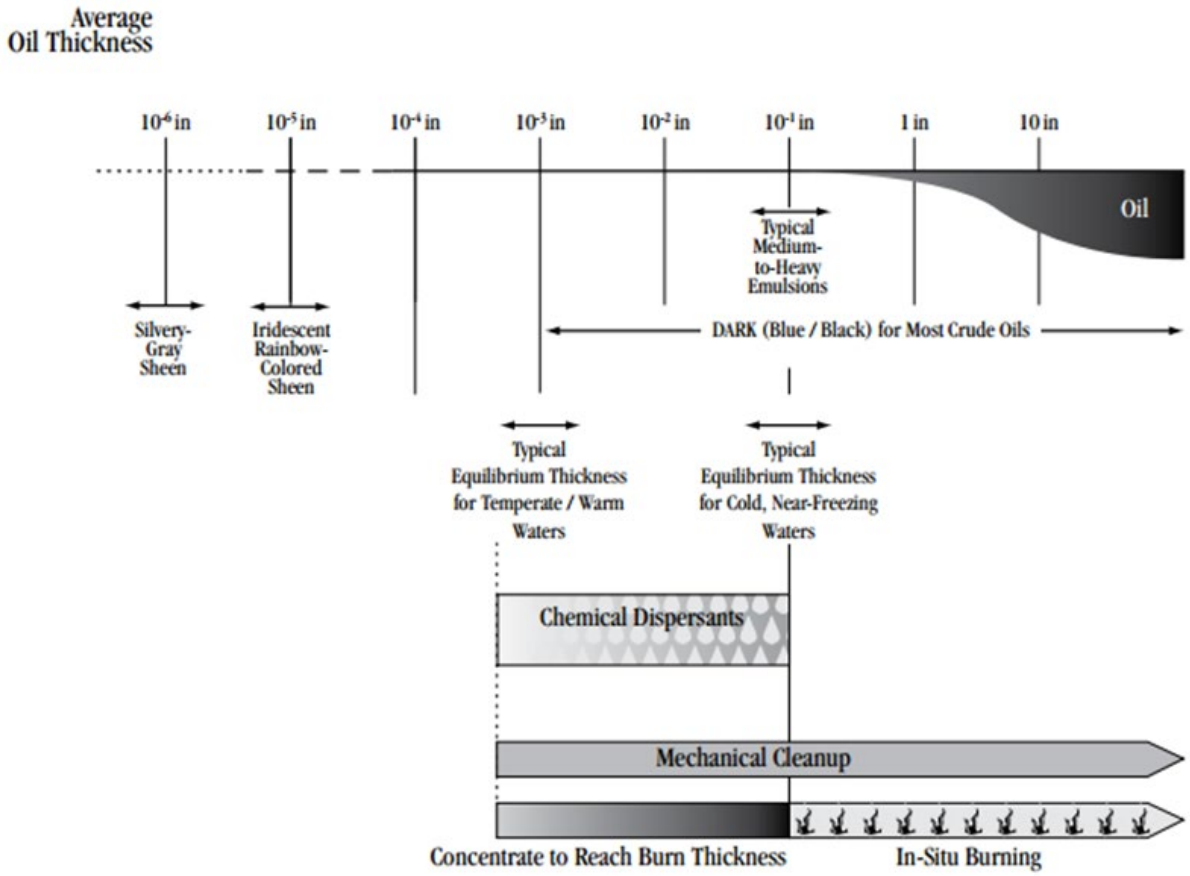

Figure 2-6: Oil thickness versus potential response options (from Allen & Dale 1996)

Wind and wave influence on the feasibility of response operations are also considered below (adapted from NOAA 2013):

- Mechanical Clean-up: Effectiveness drops significantly because of entrainment and/or splash-over as short period waves develop beyond 2–3 ft. (0.6–0.9m) in height. The ability to contain and recover oil decreases rapidly as the slick thickness becomes less than a thousandth of an inch (0.025 mm) (i.e., very low oil encounter rates). Waves and wind can also be limiting factors for the safe operation of vessels and aircraft.
- Dispersants: Effective dispersion requires a threshold amount of surface mixing energy (typically a few knots of wind and a light chop) to be effective. At higher wind and sea conditions, dispersant evaporation and wind-drift will limit chemical dispersion application effectiveness; and, there is a point (~25-kt winds, 10-ft waves) where natural dispersion forces become greater, particularly for light oils. Because of droplet size versus slick thickness constraints and application dose-rate limitations, dispersants work best on slick thicknesses of a few thousandths (approx. 50 g/m^2) to hundredths of an inch (approx. 250 g/m^2). Improved dispersants, higher dose rates, and multiple-pass techniques may extend the thickness limitation to 0.1 inch (2.5 mm) or more.

As offshore response operations (surface dispersant and containment and recovery) are intended to be undertaken at the thickest part of the slick, 50 g/m^2 and 100 g/m^2 (aligning with the lower limit of BAOAC 4 and midpoint of BAOAC 5) have been utilised by Woodside in deterministic modelling to identify the most likely locations for surface dispersant application and containment and recovery operations.

2.3.3.2 Surface hydrocarbon viscosity

Table 2-5: Surface hydrocarbon viscosity thresholds

Surface viscosity threshold (cSt)	Description	European Maritime Safety Authority (EMSA)	Viscosity at sea temperature (cSt)
5,000*	Predicted optimum viscosity for surface dispersant operations	Generally possible to disperse	500-5,000
10,000*	Predicted maximum viscosity for effective surface dispersant operations	Sometimes possible to disperse	5,000-10,000

*Measured at sea surface temperature

Further to the required thickness for surface dispersant application and containment and recovery to be deployed effectively as outlined above, changes to viscosity will also limit the treatment of offshore response techniques. As outlined in the EMSA Manual on the Applicability of Oil Spill Dispersants (EMSA, 2012), guidance around changes to viscosity and likely effectiveness of surface dispersant application is provided.

This includes the following statements: “It has been known for many years that it is more difficult to disperse a high viscosity oil than a low or medium viscosity oil. Laboratory testing had shown that the effectiveness of dispersants is related to oil viscosity, being highest for modern ‘Concentrate, UK Type 2/3’ dispersants at an oil viscosity of about 1,000 or 2,000 mPa (1,000 – 2,000 cSt) and then declining to a low level with an oil viscosity of 10,000 mPa (10,000 cSt). It was considered that some generally applicable viscosity limit, such as 2,000 or 5,000 mPa (2,000 – 5,000 cSt), could be applied to all oils.”

However, modern oil spill dispersants are generally effective up to an oil viscosity of 5,000 mPa (5,000 cSt) or more, and their performance gradually decreases with increasing viscosity; oils with a viscosity of more than 10,000 cSt are in most cases, no longer dispersible. Guidance from CEDRE (EMSA, 2012) also indicates products with a range of 500 – 5,000 cSt at sea temperature are generally possible to disperse, while 5,000 – 10,000 cSt at sea temperature above pour point are sometimes possible to disperse, with products beyond 10,000 cSt at sea temperature below pour point are generally impossible to disperse.

To support decision making and response planning, a threshold of 10,000 cSt at sea temperature was chosen as a conservative estimate of maximum viscosity for surface dispersant spraying operations.

The thresholds described above are compared with the modelling results for the WCCS (Table 2-6).

2.3.4 Spill modelling results

Details of the scenario and modelling inputs are included along with deterministic results in Table 2-6.

The selected deterministic runs used to represent the WCCS are:

- Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m^2).
- Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m^2).
- Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor (at a threshold of 100 g/m^2).
- Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors (at a threshold of 100 g/m^2).
- Minimum time to entrained hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb).

Table 2-6: Worst case credible scenario modelling results

Scenario description	Results		
	MEE-01[7]	**MEE-02**	**MEE-05 (from stochastic modelling)**
WCCS – total volume released Refer to Section 2.1.1 for detailed hydrocarbon characteristics	77-day Surface release of 19,863 m^3 of Perseus Condensate due to a loss of containment from a blowout of PEN05 well Surface – 19,863 m^3 over 77 days	16-hour Subsea release of 6371 m^3 of GWA Export Condensate at 29.89 km of TL2 Export Pipeline from shore (WCCS) 6371 m^3 over 16 hours	Release of 1000 m^3 as a result of loss of vessel separation at the PLA platform[8] Instantaneous release of 1000 m^3
WCCS – residual volume remaining post-weathering	0.6% residue or 119.2 m^3	2.3% residue or 146.5 m^3	5% residue or 50 m^3
Location	19° 35' 3.23" S, 116° 08' 17.06'E	20° 20' 20.426''S, 116° 43' 54.310''E	19° 59' 46.5" S, 115° 22' 5.6" E
Deterministic modelling results			
Surface area of hydrocarbons (>50 g/m^2)	No contact at this threshold for the duration of the spill.	5 km^2 on day 1 No further contact at this threshold after day 1.	1 hour to floating oil at 50 g/m^2 at Montebello AMP. Area not included in stochastic modelling analysis.
Surface area of hydrocarbons (>50 g/m^2 and <10,000 cSt)	No contact at this threshold for the duration of the spill.	5 km^2 on day 1.1 No further contact at this threshold after day 1.	1 hour to floating oil at 50 g/m^2 at Montebello AMP. Viscosity not included in stochastic modelling analysis.
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m^2)	No contact at this threshold	0.2 days at Dampier Archipelago (Quarter 1, Run 48)	1 hour at Montebello AMP.
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a concentration of 100 g/m^2)	32.8 days to Clerke Reef (Rowley Shoals MP) and Bedwell Island (Quarter 1, Run 13)	0.6 days to Dampier Archipelago, Keast island and Legendre Island (Quarter 1, Run 48)	No contact
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor (at a concentration of 100 g/m^2).	8 m^3 at Exmouth including Ningaloo Coast WH and Ningaloo MP (State) (57.5 days) (Quarter 4, Run 23)	325 m^3 at Dampier Archipelago (Quarter 1, Run 26)	No contact
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (at a concentration of 100 g/m^2)	8 m^3	674 m^3	No contact
Minimum time to entrained hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	No contact at this threshold	0.3 days at Dampier Archipelago and Legendre Island	1 hour at Montebello AMP.
The full list of response protection areas (RPAs) predicted from modelling is available in Table 3-1			

[7] The subsea Persephone wells have been excluded from this scenario as these subsea wells exhibit water inflow and outflow dynamics. Consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well.

[8] Modelling for a release of 1000 m^3 Marine Gas Oil was available within Pluto Facility Operations, 83 km closer to shore than the Operational Area for this activity. It was originally undertaken in 2024 using NOPSEMA's contemporary modelling thresholds. The worst-case scenario for this category remains unchanged at approximately 1000 m^3 due to the rupture of a vessel wing tank, which is the same modelled volume for the PLA Facility (1000 m^3). Given that spill parameters and geographic location fall within the envelope of the existing modelling, it is an appropriate surrogate and therefore additional modelling was not required.

From the above modelling results, MEE-1 and MEE-02 modelling results have been used as the basis for response planning and are included in Section 4.2

From analysis of the deterministic results, modelling predicts the following:

2.3.4.1 North Rankin Complex Facility Operations – MEE-01

- The surface release results in insufficient concentrations for effective surface dispersant and containment and recovery operations due to the rapid spreading and weathering of the surface oil due to the loss of light, volatile components.
- The release results in sufficient concentrations for effective shoreline response at a few limited shoreline receptors.
- Weathering predictions for the release indicate a low residual portion of hydrocarbons (0.6%).
- 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.

2.3.4.2 North Rankin Complex Facility Operations – MEE-02

- The subsea release results in insufficient concentrations for effective surface dispersant and containment and recovery operations due to the rapid spreading and weathering of the surface oil due to the loss of light, volatile components.
- The release results in sufficient concentrations for effective shoreline response at a few shoreline receptors.
- The release is predicted to move beyond the area of release into WA State waters by approximately day 1.
- Weathering predictions for the release indicate a relatively low residual portion of hydrocarbons (2.3%)
- 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 (OMPs) – including trajectory modelling and vessel/aerial observations – would be used to predict RPAs that may be impacted. For the purposes of planning and appropriately scaling a response, modelling has been used to identify RPAs as outlined below in Figure 3-1.

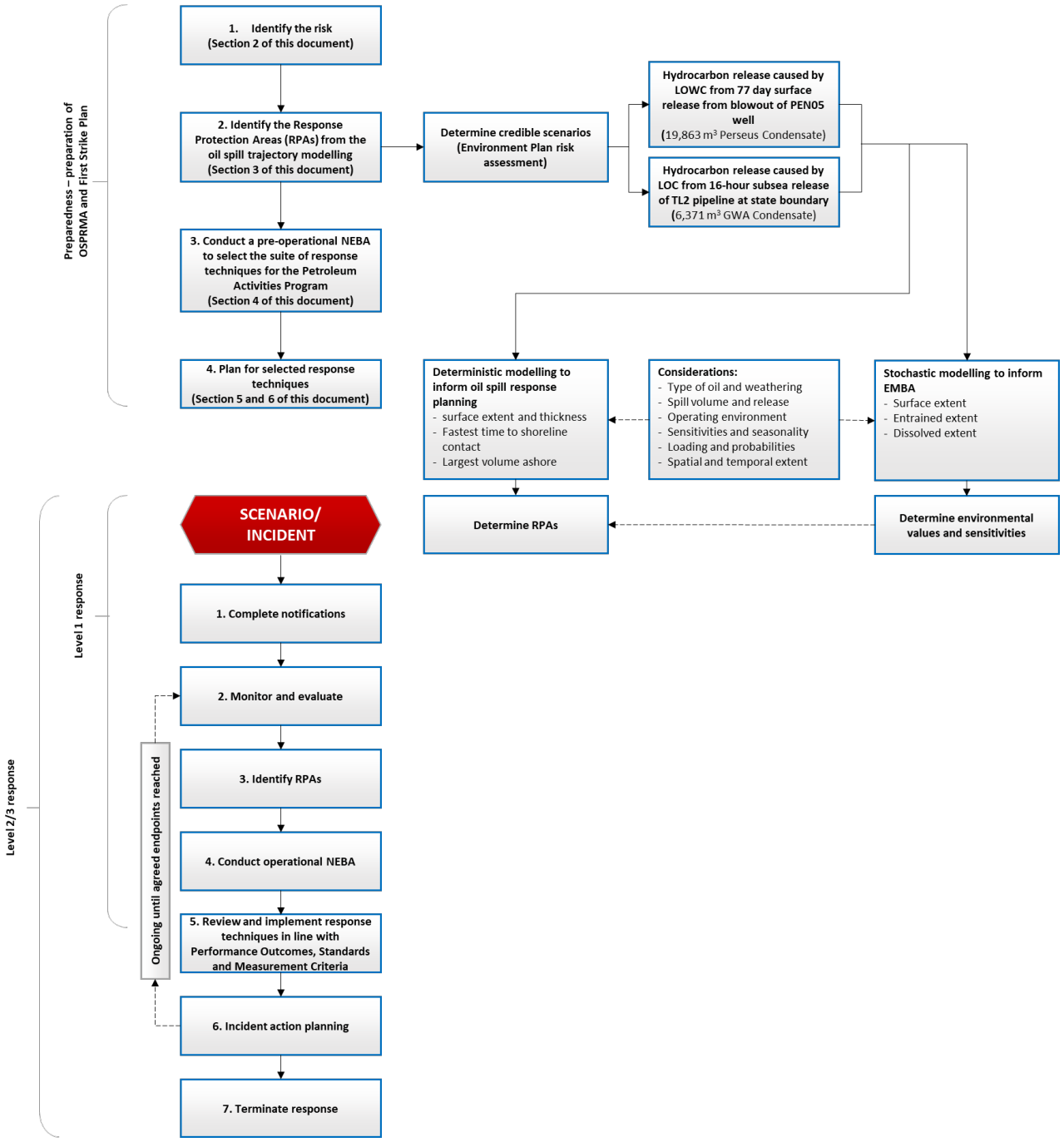

Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Section 6.7 of the EP includes the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds
- receptors within the EMBA which meet the following:

- a number of priority protection criteria/categories
- International Union of Conservation of Nature (IUCN) marine protected area categories
- high conservation value habitat and species
- important socio-economic/heritage value.

3.2 Identify Response Protection Areas (RPAs)

RPAs have been selected on the basis of their environmental ecological, social, economic, cultural and heritage values and sensitivities and the ability to conduct a response based on the minimum response thresholds (Section 2.3.3). It is important to note that the figures outlined in Table 3-1 are the combined results of the individual worst-case runs and do not indicate a single worst case credible scenario (where the timings and volumes are all expected from one release).

From the identified sensitive receptors described in Section 6.7 of the EP, only those which a shoreline response could feasibly be conducted (accumulation > 100 g/m^2 for shoreline assessment and/or contact with surface slicks >10 g/m^2 for operational monitoring) have been selected for response planning purposes. While not discounting other sensitivities, these RPAs have been used as the basis for demonstrating the capability to respond to the nature and scale of a spill from the WCCS and prioritising response techniques.

Table 3-1 outlines locations which were identified from the modelling runs for the WCCS but does not constitute the full list of Priority Protection Areas (PPAs) potentially contacted from stochastic modelling (as per EMBA definition) (see Section 6.7 of the EP). Other PPA outliers were identified from the modelling and have been included in the assessment of capability in Sections 5 and 6.

Additional sensitive receptors are presented the existing environment description (Section 4 of the EP) and impact assessment section (Section 6 of the EP) for each respective spill scenario. The pre-operational NEBA (Section 4) considers the results from the stochastic modelling to allow consideration of all feasible response techniques are considered in the planning phase, therefore additional receptors are also included in the pre-operational NEBA.

The RPAs identified in Table 3-1 are used to plan for the nature and scale of a shoreline response.

Table 3-1: Response Protection Areas (RPAs) from deterministic modelling for North Rankin Complex Facility Operations

Response protection area	Conservation status	IUCN protection category	Minimum time to commencement of oil accumulation at any shoreline receptor (at a threshold of 100 g/m2) [9]	Maximum cumulative oil volume accumulated across all shoreline receptors (at concentrations in excess of 100 g/m^2) in m^3 [10]
Well Loss of Containment (MEE-01) – Surface Release				
Clerke Reef and Bedwell Island	Australian Marine Park	National Park Zone – II Multiple Use Zone – VI Special Purpose Zone – V	32.8 days (<1 m^3)	<1 m^3 (32.8 days)
Exmouth Coastline	Australian Marine Park World Heritage Area WA State Marine Park	Recreational Use Zone – IV General Use Zone – II Sanctuary Zone - IA	57.3 days (8 m^3)	8 m^3 (57.3 days)
Ningaloo WH				
Ningaloo MP (State)				
Subsea Equipment Loss of Containment (MEE-02) – Subsea release				
Dampier Archipelago	National Heritage Place	Habitat Protection Zone – IV National Park Zone – II Multiple Use Zone – VI	0.6 days (13 m^3) (Quarter 1, Run 48)	325 m^3 (1.8 days) (Quarter 1, Run 26)
Cape Bruguieres	National Heritage Place		1.3 days (1 m^3) (Quarter 1, Run 26)	9 m^3 (1.5 days) (Quarter 1, Run 26)
Cohen Island	National Heritage Place		0.8 days (1 m^3) (Quarter 1, Run 26)	267 m^3 (2 days) (Quarter 1, Run 26)
Legendre Island	National Heritage Place		0.6 days (11 m^3) (Quarter 1, Run 48)	46 m^3 (2.8 days) (Quarter 1, Run 26)
Keast Island	National Heritage Place		0.6 days (4 m^3) (Quarter 1, Run 48)	27 m^3 (2 days) (Quarter 1, Run 26)

[9] This volume and time represent the first time to contact on defined shoreline polygon and the maximum volume ashore for that 24 hour period.
[10] This volume and time represent the maximum volume ashore on defined shoreline polygon for any 24 hour time period

4 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

A Net Environmental Benefit Analysis (NEBA) is a structured process to consider which response techniques are likely to provide the greatest net environmental benefit.

The NEBA process typically involves four key steps outlined in Figure 4-1: evaluate data, predict outcomes, balance trade-offs, and select response options. These steps are followed in the planning/preparedness process and would also be followed in a response.

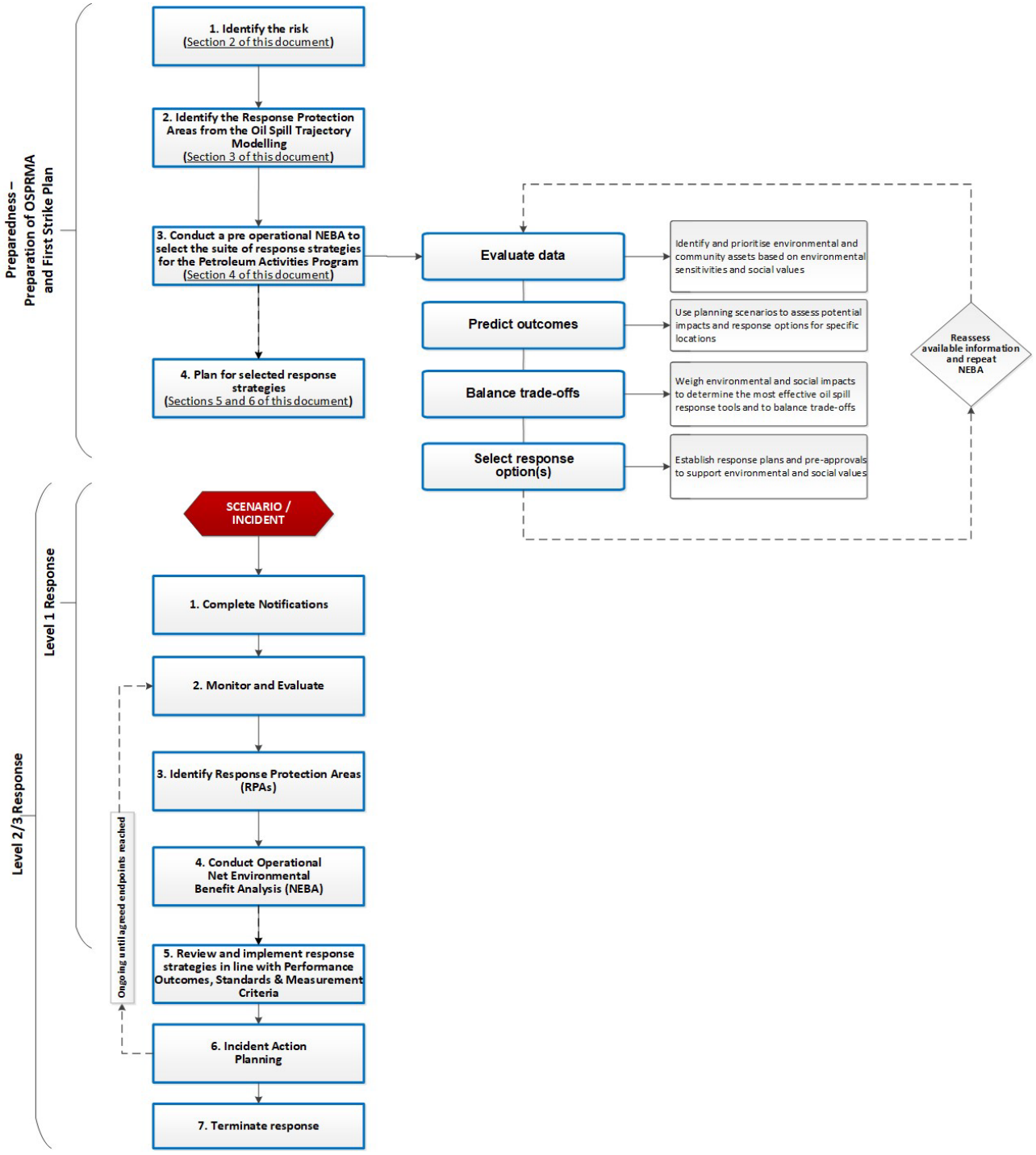

Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

4.1 Pre-operational / Strategic NEBA

The pre-operational NEBA identifies positive and negative impacts to sensitive receptors from implementing the response techniques. Feasibility is considered by assessing the receptors potentially impacted above response thresholds (Section 2.3.3) and the surface concentrations (Section 2.3.3.1) from the deterministic modelling.

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. Comprehensive details of the pre-operational NEBA for this PAP are contained in **ANNEX A**: Net Environmental Benefit Analysis detailed outcomes.

4.2 Stage 1: Evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the PAP activities.

4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. The WCCS is then selected for deterministic modelling and is used for this pre-operational NEBA. Outlier locations with potential environmental impacts, selected from the stochastic modelling may also be included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/effectiveness and scale of the response. Modelling results are available in **Table 2-6** and **Table 3-1**.

4.3 Stage 2: Predict Outcomes

Woodside uses planning scenarios to assess potential impacts and response options for specific locations. Locations with potential environmental impacts, selected from the stochastic modelling are included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/ effectiveness of a response.

4.4 Stage 3: Balance trade-offs

Woodside considers environmental impacts and response effectiveness/ feasibility to determine the most effective oil spill response tools and balance trade-offs, using an automated NEBA tool. The tool considers potential benefits and impacts associated with a response at sensitive receptors and then considers the effectiveness/ feasibility of the response to select the response techniques carried forward to the ALARP assessment. The NEBA can be found in **ANNEX A: Net Environmental Benefit Analysis detailed outcomes**.

4.5 Stage 4: Select Best Response Options

To select the response technique, all the other stages in the NEBA process are considered and used to establish response plans and any pre-approvals to support protection of identified environmental and social values.

The response techniques implemented may vary according to a particular spill. The hydrocarbon type released and the sensitivities of the receptors (both ecological and socio-economic) may influence the response. The pre-operational NEBA broadly evaluates each response technique and supports decisions on whether they are feasible and of net environmental benefit. Response techniques that are not feasible or beneficial are rejected at this stage and not progressed to planning.

Further risks and impacts from implementing these selected response options are outlined in Section 7.

4.5.1 Determining potential response options

The available response techniques based on current technology can be summarised under the following headings:

- Operational monitoring
- Source control
  - Remotely operated vehicle (ROV) intervention

  - debris clearance and/or removal
  - capping stack
  - relief well drilling
- Source control via vessel SOPEP
- Subsea dispersant injection
- Surface dispersant application:
  - aerial dispersant application
  - vessel dispersant application
- Mechanical dispersion
- In-situ burning
- Containment and recovery
- Shoreline protection and deflection:
  - protection
  - deflection
- Shoreline clean-up:
  - Phase 1 – mechanical clean-up
  - Phase 2 – manual clean-up
  - Phase 3 – final polishing
- Oiled wildlife response (including hazing)

Support functions may include:

- Waste management
- Operational and scientific monitoring

Table 4-1 and Table 4-2 include scenario-specific assessments of feasible response options and justification for the exclusion of inappropriate options. These options are evaluated against the scenario parameters including oil type, volume, characteristics, prevailing weather conditions, logistical support, and resource availability to determine deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and different times during the response. The NEBA process assists in prioritising which options to use where and when, and timings throughout the response.

Table 4-1: Response technique evaluation – MEE-01: Loss of well containment (LOWC)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Perseus Condensate				
Operational Monitoring	Will be effective in tracking the location of the spill, informing when it has entered State Waters, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: • Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. • Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. • Pre-emptive assessment of sensitive receptors at risk – triggered once operational monitoring informs likely RPAs at risk. • Shoreline assessment – once operational monitoring informs which RPAs have been impacted.	Monitoring of a Perseus Condensate spill is a feasible response technique and an essential element of all spill response incidents. Outputs will be used to guide decision making on the use of other monitoring/response techniques and providing required information to regulatory agencies including AMSA and Western Australia Department of Transport (WA DoT).	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via well intervention using ROV and hotstab	Controlling a loss of well containment at source via well intervention would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	In the event of the worst-case scenario with a loss of well containment during operations, well intervention via ROV would be attempted.	Yes	The use of source control intervention via ROV may be feasible (depending on local concentration of atmospheric volatiles) and would reduce quantity of hydrocarbons entering the marine environment.
Source control via debris clearance and capping stack	Controlling a loss of well containment at source via capping stack would be an effective way to limit the quantity of hydrocarbon entering the marine environment.	Source control via capping stack for a loss of well containment from PEN05 well (MEE-01) is not feasible due to it being a platform wellhead positioned above sea level. The two subsea Persephone wells exhibit water inflow and outflow dynamics and consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well.	No	Capping stack as a source control method is not considered feasible for PEN05 well as the wellhead is positioned above sea level. Additionally, the two subsea Persephone wells exhibit water inflow and outflow dynamics and consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well and precluding capping stack requirement.
Source control via relief well drilling	A release of condensate will be over approximately 77 days. Relief well drilling is one of the primary options to stop the release.	For MEE-01, relief well drilling will be a feasible means of stopping a loss of well containment event. Relief well drilling is a widely accepted and utilised technique.	Yes	Relief well drilling will be the main technique employed to control a loss of well containment event.
Subsea dispersant injection	Application of subsea dispersant may reduce the scale and extent of hydrocarbons reaching the surface and thus may reduce spill volumes contacting predicted RPAs. SSDI can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals and fish, which may be otherwise unaffected. Entrained oil plume likely to be increased resulting in greater spatial extent of entrained oil.	Subsea dispersant injection is not considered feasible for a loss of well containment from PEN05 well (MEE-01) due to it being a platform wellhead positioned above sea level. The two subsea Persephone wells exhibit water inflow and outflow dynamics and consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well and would therefore not require the application of subsea dispersant. .	No	This technique is not feasible for platform wellheads. Additionally, not viable for the two subsea Persephone wells which exhibit water inflow and outflow dynamics as, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well and would therefore not require the application of subsea dispersant..
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce volatile organic compounds (VOCs) in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	Surface dispersants are not generally considered a feasible response technique when applied to thin surface films such as condensate, as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon. EMSA (2010) recommends thin layers of spilled hydrocarbons should not be treated with surface dispersant, including surface slicks with Bonn Agreement Oil Appearance Codes (BAOAC) 1-3. Modelling of a Perseus Condensate spill for the North Rankin Complex Facility Operations drilling project predicts that floating oil will be prone to rapid spreading and evaporation. Modelling does not predict floating hydrocarbons to reach the minimum required threshold (>50 g/m^2) for surface dispersant to be feasible for the duration of the spill event. The volatile nature of the condensates is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon spill, thus this response technique is deemed unsuitable for this activity.	No	Perseus Condensate will rapidly evaporate and disperse, resulting in spill thicknesses too thin to effectively treat with surface dispersant. The use of surface dispersant could unnecessarily introduce additional chemical substances to the marine environment and further increase exposure of subsea ecosystems to entrained hydrocarbons.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ burning	In-situ burning is only effective where minimum slick thickness can be achieved and where calm metocean conditions can be confirmed. Use of this technique would also cause an increase the release of atmospheric pollutants.	There is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which would be difficult to achieve. Furthermore, this technique may be prevented from being undertaken due to personnel safety issues arising from predicted high local concentrations of atmospheric volatiles.	No	The safety concerns and the predicted low effectiveness associated with implementing an in-situ burning response outweigh the potential environmental benefit.
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. It has the potential to reduce the magnitude, probability, extent, contact and accumulation of hydrocarbon on shorelines receptors when suitable encounter rates can be achieved. It also has the potential to reduce the magnitude and extent of contact with submerged receptors by removing oil before further natural entraining/dissolving of hydrocarbons occurs.	Modelling of a Perseus Condensate spill for the North Rankin Complex Facility Operations drilling project predicts that floating oil will be prone to rapid spreading and evaporation. Modelling does not predict floating hydrocarbons to reach the minimum required threshold (>50 g/m^2) for containment and recovery to be feasible. The volatile nature of Perseus Condensate is also likely to lead to unsafe conditions near release location.	No	Containment and recovery would be an ineffective response technique as it requires a hydrocarbon thickness of BAOAC 4-5 with a 50-100% coverage of 100-200 g/m^2. Perseus Condensate will rapidly evaporate and disperse, resulting in spill thicknesses too thin for this strategy.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of sensitive resources and can be used to corral oil into slicks thick enough to skim effectively.	If real-time Operational Monitoring activities indicate surface hydrocarbons are moving toward shorelines, pre-emptive assessments of sensitive receptors at risk and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DoT (for Level 2/3 spills). For this scenario, deterministic modelling predicts shoreline accumulations from floating surface hydrocarbon to occur on day 32.3 (<1 m^3 at Clerke Reef and Bedwell Island) and 57.3 (8 m^3 at Exmouth Coastline, Ningaloo WH, and Ningaloo MP) only allowing adequate time to deploy this technique. Protection strategies can be used for targeted protection of sensitive resources. Access to sensitive areas may cause more negative impact than benefit.	Yes	RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event. If RPAs are deemed to be at risk, based on real-time modelling during a spill event, shoreline protection and deflection techniques will be employed to minimise hydrocarbon accumulation providing net environmental benefit.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	If real-time Operational Monitoring activities indicate hydrocarbons will contact shorelines, pre-emptive assessments of sensitive receptors at risk, shoreline assessments and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DoT (for Level 2/3 spills). For this scenario, deterministic modelling predicts shoreline accumulations from floating surface hydrocarbon to occur on day 32.3 (<1 m^3 at Clerke Reef and Bedwell Island) and 57.3 (8 m^3 at Exmouth Coastline, Ningaloo WH, and Ningaloo MP) only allowing adequate time to deploy this technique. Can reduce or prevent impact on sensitive receptors in most cases. Must confirm, through shoreline assessment, that sensitive sites will benefit from clean-up activities as the response itself may cause more negative impact than benefit through disturbance of habitats and species.	Yes	Response Protection Areas predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event. If RPAs are at risk, based on real-time modelling during a spill event, shoreline clean-up techniques will be deployed to expedite clean-up of the impacted sites. Removal of hydrocarbons will help shorten the recovery window unless shoreline type is of a sensitive nature. This technique can help prevent remobilisation of hydrocarbon and impact on shorelines.
Oiled wildlife	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	In the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists. Due to the likely volatile atmospheric conditions surrounding a Perseus Condensate spill, response options may be limited to hazing to ensure the safety of response personnel.	Yes	This technique may prevent impact to and/or treat oiled wildlife providing net environmental benefit.

Table 4-2: Response technique evaluation – MEE-02: Subsea Equipment Loss of Containment (LOC)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: GWA Export Condensate				
Operational Monitoring	Will be effective in tracking the location of the spill, informing when it has entered State Waters, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: • Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. • Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. • Pre-emptive assessment of sensitive receptors at risk – triggered once operational monitoring informs likely RPAs at risk. • Shoreline assessment – once operational monitoring informs which RPAs have been impacted.	Monitoring of a Perseus Condensate spill is a feasible response technique and an essential element of all spill response incidents. Outputs will be used to guide decision making on the use of other monitoring/response techniques and providing required information to regulatory agencies including AMSA and Western Australia Department of Transport (WA DoT).	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via Emergency shutdown (ESD) valves	Controlling a loss of containment at source via the ESD valves is an effective way to reduce the amount of hydrocarbon released into the marine environment in the event of a hydrocarbon release.	In the event of the worst-case scenario with a loss of containment from the export pipeline, the use of ESD valves would be attempted.	Yes	Source control from the facility will be the main technique employed to control a loss of containment event of the export pipeline.
Source control manually via ROV	Controlling a loss of containment at source via would an effective way to manually override the subsea valves in the event of a hydrocarbon release.	In the event of the worst-case scenario with a loss of containment from the export pipeline, the use of ROV operations to actuate the subsea vales would be attempted in the event of failure of valve operation.	Yes	Source control via ROV will be a secondary technique employed in the event that ESD valves are not effective.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce volatile organic compounds (VOCs) in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	Surface dispersants are not generally considered a feasible response technique when applied to thin surface films such as condensate, as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon. EMSA (2010) recommends thin layers of spilled hydrocarbons should not be treated with surface dispersant, including surface slicks with Bonn Agreement Oil Appearance Codes (BAOAC) 1-3. Modelling of a GWA Export Condensate spill for the North Rankin Complex Facility Operations drilling project predicts that floating oil will be prone to rapid spreading and evaporation. Modelling predicts floating hydrocarbons to reach the required minimum threshold (>50 g/m^2) for surface dispersant to be feasible at Dampier AMP on day 1 only, with the remaining RPAs not reaching this threshold for the remainder of the modelled spill event. Due to the limited duration of the floating hydrocarbon at suitable thresholds, the use of dispersant would not provide a net environmental benefit. The volatile nature of GWA Export Condensate is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon spill, thus this response technique is deemed unsuitable for this activity.	No	GWA Export Condensate will rapidly evaporate and disperse, resulting in spill thicknesses too thin to effectively treat with surface dispersant. The use of surface dispersant would therefore not provide a net environmental benefit as it could unnecessarily introduce additional chemical substances to the marine environment and further increase exposure of subsea ecosystems to entrained hydrocarbons.
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ burning	In-situ burning is only effective where minimum slick thickness can be achieved and where calm metocean conditions can be confirmed. Use of this technique would also cause an increase the release of atmospheric pollutants.	There is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which would be difficult to achieve. Furthermore, this technique may be prevented from being undertaken due to personnel safety issues arising from predicted high local concentrations of atmospheric volatiles.	No	The safety concerns and the predicted low effectiveness associated with implementing an in-situ burning response outweigh the potential environmental benefit.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. It has the potential to reduce the magnitude, probability, extent, contact and accumulation of hydrocarbon on shorelines receptors when suitable encounter rates can be achieved. It also has the potential to reduce the magnitude and extent of contact with submerged receptors by removing oil before further natural entraining/dissolving of hydrocarbons occurs.	Modelling of a GWA Export Condensate spill for the North Rankin Complex Facility Operations drilling project predicts that floating oil will be prone to rapid spreading and evaporation. Modelling predicts floating hydrocarbons to reach the required minimum threshold (>50 g/m^2) for containment and recovery to be feasible at Dampier AMP on day 1 only, with the remaining RPAs not reaching this threshold for the remainder of the modelled spill event. Due to the limited duration of the floating hydrocarbon at suitable thresholds, the use of containment and recovery would not be practicable. The volatile nature of GWA Export Condensate is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon spill, thus this response technique is deemed unsuitable for this activity. The volatile nature of GWA Export Condensate is also likely to lead to unsafe conditions near release location.	No	Containment and recovery would be an ineffective response technique as it requires a hydrocarbon thickness of BAOAC 4-5 with a 50-100% coverage of 100-200 g/m^2. Containment and recovery of condensate also poses a significant safety risk due to low flash points. Corralling low flash point substances should be avoided, therefore this response technique is not feasible.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of sensitive resources and can be used to corral oil into slicks thick enough to skim effectively.	If real-time Operational Monitoring activities indicate surface hydrocarbons are moving toward shorelines, pre-emptive assessments of sensitive receptors at risk and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DoT (for Level 2/3 spills). For this scenario, deterministic modelling predicts first shoreline accumulation from floating surface hydrocarbon on day 0.6 (13 m^3 at Dampier Archipelago, 4 m^3 at Keast Island, 11 m^3 at Legendre Island), therefore, the effectiveness of this technique may be limited by the time to deploy. Protection strategies can be used for targeted protection of sensitive resources. Access to sensitive areas may cause more negative impact than benefit.	Yes	RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event. If RPAs are deemed to be at risk, based on real-time modelling during a spill event, shoreline protection and deflection techniques will be employed to minimise hydrocarbon accumulation providing net environmental benefit.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	If real-time Operational Monitoring activities indicate hydrocarbons will contact shorelines, pre-emptive assessments of sensitive receptors at risk, shoreline assessments and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DoT (for Level 2/3 spills). For this scenario, deterministic modelling predicts first shoreline accumulation from floating surface hydrocarbon on day 0.6 (13 m^3 at Dampier Archipelago, 4 m^3 at Keast Island, 11 m^3 at Legendre Island), indicating that this technique will be required. Can reduce or prevent impact on sensitive receptors in most cases. Must confirm, through shoreline assessment, that sensitive sites will benefit from clean-up activities as the response itself may cause more negative impact than benefit through disturbance of habitats and species.	Yes	Response Protection Areas predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event. If RPAs are at risk, based on real-time modelling during a spill event, shoreline clean-up techniques will be deployed to expedite clean-up of the impacted sites. Removal of hydrocarbons will help shorten the recovery window unless shoreline type is of a sensitive nature. This technique can help prevent remobilisation of hydrocarbon and impact on shorelines.
Oiled wildlife	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	In the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists. Due to the likely volatile atmospheric conditions surrounding a GWA Export Condensate spill, response options may be limited to hazing to ensure the safety of response personnel.	Yes	This technique may prevent impact to and/or treat oiled wildlife providing net environmental benefit.

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:

- considers the Response Planning Need identified in terms of surface area (km^2) and available surface hydrocarbon volumes (m^3) against existing Woodside capability
- considers alternative, additional, and improved options for each response technique/control measure by providing an initial and, if required, detailed evaluation of:
    - predicted cost associated with adopting the control measure
    - predicted change/environmental benefit
    - predicted effectiveness/feasibility of the control measure.
- evaluates the risks and impacts of implementing the proposed response techniques, and any further control measures with associated environmental performance to manage these additional risks and impacts.

Woodside considers the risks and impacts from a hydrocarbon spill to have been reduced to ALARP when:

- a structured process for identifying and considering alternative, additional, and improved options has been completed for each selected response technique
- the analysis of alternate, additional, and improved control measures meets one of the following criteria:
    - all identified, reasonably practicable control measures have been adopted; or
    - no identified reasonably practicable additional, alternative and/or improved control measures would provide further overall increased proportionate environmental benefit; or
    - no reasonably practical additional, alternative, and/or improved control measures have been identified.
- where an alternative, additional and/or improved control measure is adopted, a measurable level of environmental performance has been assigned
- higher order impacts/ risks have received more comprehensive alternative, additional, and improved control measure evaluations and do not just compare the cost of the adopted control measures to the costs of an extreme or clearly unreasonable control measure
- cumulative effects have been analysed when considered in combination across the whole activity.

The response technique selection is based on the risk assessment conducted in the EP. The risk assessment identifies the type of oil, volume of release, duration of release, predicted fate, weathering and the EMBA (along with other requirements such as time to impact and predicted volumes ashore). Modelling is then used to inform the NEBA and the prioritisation of suitable response options. The scale of the response techniques selected in the pre-operational NEBA is informed through the assessment of results from deterministic modelling.

For the purpose of the ALARP assessment, the following terms and definitions have been used:

- response techniques are considered the control measures that reduce consequences from hydrocarbon spill events. The terms 'response technique' and 'control measure' are used interchangeably
- cost is defined as the time, effort and/or trouble taken in financial, safety, design/storage/installation, capital/lease, and/or operations/maintenance terms to adopt a control measure

- where the predicted change to environmental impact is compared against standard environmental values and sensitivities impacts using positive or negative criteria from the NEBA Impact Ranking Classification Guidance in Annex A.

5.1 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.

Techniques may include:

- Predictive modelling of hydrocarbons to assess resources at risk
- Surveillance and reconnaissance to detect hydrocarbons and resources at risk
- Pre-emptive assessment of sensitive receptors at risk
- Shoreline assessment (SCAT)

Woodside maintains an *Operational Monitoring Operational Plan*. If shoreline contact is predicted, Response Protection Areas (RPAs) will be identified and assessed before contact. If shorelines are contacted, a shoreline assessment survey (SCAT) will be completed to guide effective shoreline clean-up operations per arrangements detailed in Woodside's Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP) (see Section 5.8). This plan includes the process for the CIMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Exmouth / Karratha to the spill event location means that multiple logistical options are available to monitor the spill in relatively short timeframes. The primary mobilisation base for initial monitoring activities would be Dampier. However, in the unlikely event of an extended spill with potential to impact receptors further afield, monitoring activities may also be mobilised from Onslow / Dampier / Port Hedland.

5.1.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Floating surface oil in sufficient concentrations for effective operational monitoring is expected with surface concentrations of 10 g/m^2 reaching an extensive number of receptors from the well location, with the shortest time being Dampier Archipelago in 0.2 days (MEE-02). Floating hydrocarbons at concentrations of 50 g/m^2 was predicted to reach Dampier Archipelago only in 1.1 days (MEE-02).
- The shortest timeframe that shoreline contact from floating oil at concentrations of 100 g/m^2 is predicted was at 0.6 days at Dampier Archipelago, Keast Island, and Legendre Island (MEE-02).
- The shortest time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 6 hours at Dampier Archipelago (MEE-02).
- Arrangements for support organisations who provide specialist services or resources should be tested regularly.
- Plans, procedures and support documents need to be in place for Operational and Support Sections. These should be reviewed and updated regularly.
- The duration of the spill may extend to 16 hours (MEE-02) or 77 days (MEE-01) with response operations continuing for up to 2- 3 months based on the predicted time to complete shoreline clean-up operations.

5.1.2 Environmental performance based on need

Table 5-1: Environmental Performance – Operational Monitoring

Environmental Performance Outcome		Implement operational monitoring to provide situational awareness to inform IMT decision-making.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
1	Oil spill trajectory modelling	1.1	Initial modelling available within 6 hours using the Rapid Assessment Tool	1, 3B, 3C, 4
		1.2	Detailed modelling available within 4 hours of RPS receiving information from Woodside	
		1.3	Detailed modelling service available for the duration of the incident upon contract activation	
2	Tracking buoy	2.1	Tracking buoy located on facility/ lead vessel and ready for deployment 24/7	1, 3A, 3C, 4
		2.2	Deploy tracking buoy from facility/ lead vessel within 2 hours as per the First Strike Plan.	1, 3A, 3B, 4
		2.3	Contract in place with service provider to allow data from tracking buoy to be received 24/7 and processed.	1, 3B, 3C, 4
		2.4	Data received to be uploaded into Woodside common operating picture (COP) daily to improve the accuracy of other Operational Monitoring techniques.	1, 3B, 4
3	Satellite imagery	3.1	Contract in place with 3rd party provider to enable access and analysis of satellite imagery. Imagery source/type requested on activation of service.	1, 3C, 4
		3.2	3rd party provider will confirm availability of an initial acquisition within 2 hours	1, 3B, 3C, 4
		3.3	First image received with 24 hours of Woodside confirming to 3rd party provider its acceptance of the proposed acquisition plan.	1
		3.4	3rd party provider to submit report to Woodside per image. Report is to include a polygon of any possible or identified slick(s) with metadata.	1
		3.5	Data received to be uploaded into Woodside COP daily to improve accuracy of other Operational Monitoring techniques.	1, 3B, 4
		3.6	Satellite Imagery services available and employed during response	1, 3C, 4
4	Aerial surveillance	4.1	1 x trained aerial observers available to be deployed by day 1 from resource pool.	1, 2, 3B, 3C, 4
		4.2	1 x aircraft available for two sorties per day, available for the duration of the response from day 1	1, 3C, 4
		4.3	Observer to compile report during flight as per FSP. Observers report available to the IMT within 2 hours of landing after each sortie.	1, 2, 3B, 4
		4.4	Unmanned Aerial Vehicles/Systems (UAV/UASs) to support Shoreline Contamination Assessment Technique (SCAT), containment and recovery and surface dispersal and pre-emptive assessments as contingency if required.	1, 2
			•	

Environmental Performance Outcome		Implement operational monitoring to provide situational awareness to inform IMT decision-making.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
5	Pre-emptive assessment of sensitive receptors	5.1	Mobilisation within 24 hours, in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 x specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4
		5.2	Daily reports provided to IMT on the status of the receptors to prioritise Response Protection Areas (RPAs) and maximise effective utilisation of resources.	1, 3B, 4
6	Shoreline Clean-up Assessment Technique (SCAT)	6.1	Mobilisation within 24 hours, in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 x specialist(s) in SCAT from resource pool for each of the Response Protection Areas (RPAs) with predicted impacts	1, 2, 3B, 3C, 4
		6.2	Reports from OMP: Shoreline Clean-up Assessment will be provided to the IMT daily, detailing the assessed areas to maximise effective utilisation of resources.	1, 3B, 4
		6.3	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations	1

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 seek to maintain sufficient capability for the duration of the response.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.1.

5.2 Source control and well intervention

The worst-case credible scenario for a loss of well containment, is considered to be major damage to, or complete loss of, the Xmas tree from a producing topside well, and the failure of the SSSV. This scenario would result in an uncontrolled flow from the well as outlined in the EP. In the event of a complete break or separation of the tree, the primary response would be relief well drilling.

The Woodside CIMT is able to mobilise resources for Xmas Tree intervention, Subsea First Response Toolkit (SFRT) support and relief well drilling. Woodside has pre-identified vessel specifications and contracts required for SFRT debris clearance work and 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 an LOWC incident were to occur. The MoU commits the signatories to share MODUs, equipment, personnel and services to assist another operator in need. A moored MODU, for the relief well construction, has been used as the basis for the analysis within this document.

5.2.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Prior to any source control activities, Woodside will implement protocols to confirm that the site is safe including subsea ROV surveys and surface air monitoring.
- Hydrocarbons will flow from the well until one of the following interventions can be made:
  - direct intervention to close Xmas tree
  - well intervention is performed to isolate the well
  - A relief well is drilled and first attempt at well kill within 77 days (MEE-01)
- Arrangements for support organisations who provide specialist services or resources should be tested regularly.
- Plans, procedures and support documents need to be in place for Operational and Support Sections. These should be reviewed and updated regularly.
- The duration of the spill may be up to 77 days (MEE-01) with response operations extending up to 2-3 months based on the predicted time to complete shoreline clean-up operations.

In addition, a number of assumptions are required to estimate the response need for source control. These assumptions have been described in the table below.

Table 5-2: Response Planning Assumptions – Source Control

Response planning assumptions	
Safety considerations	Source control operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site, in accordance with the Woodside Management System (WMS). Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • high winds, waves and/or sea states • high ambient temperatures.
Feasibility considerations	Woodside's primary source control option would be ROV intervention, well intervention and relief well drilling for the North Rankin Complex Facility Operations and wells. The following approaches outline Woodside's hierarchy for relief well drilling; • Primary – Review internal drilling programs and MODU availability to source an appropriate rig operating within Australia with an approved Safety Case; • Alternate – Source and contract a MODU through AEP MOU that is operating within Australia with an approved Safety Case; • Contingency – Source and contract a MODU outside Australia with an approved Australian Safety Case

5.2.2 Environmental performance based on need

Table 5-3: Environmental Performance – Source Control

Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
7	Subsea First Response Toolkit (SFRT)	7.1	Oceaneering support staff available all year round, via contract, to assist with the mobilisation, deployment, and operation of the SFRT equipment.	1, 3B, 3C
		7.2	Intervention vessel with minimum requirement of a working class ROV and operator.	1, 3C
		7.3	Mobilised to site for deployment within 11 days.	1, 3B, 3C
		7.4	Open communication line to be maintained between IMT and infield operations to confirm awareness of progress against plan(s).	1, 3A, 3B
8	Well intervention	8.1	Frame agreements with ROV providers in place to be mobilised upon notification. ROV equipment deployed within 7 days. •	1, 3B, 3C
		8.2	Identify source control vessel availability within 24 hours and begin contracting process. Vessel mobilised to site for deployment within 16.	1, 3B, 3C
		8.3	Hot Stab and/or well intervention attempt made using ROV and SFRT within 11 days.	1, 3B, 3C
		8.4	Contract in place for access to equipment and staff to assist with the mobilisation, deployment, and operation of well intervention equipment.	1, 3B, 3C
		8.5	MODU mobilised to site for relief well drilling within 21 days.	1, 3C
		8.6	First well kill attempt completed within 77 days	1, 3B, 3C
		8.7	Open communication line(s) to be maintained between IMT and infield operations to confirm awareness of progress against plan(s).	1, 3A, 3B
		8.8	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
9	Support vessels	9.1	Access to 24/7 vessel tracking software to monitor availability of suitable vessels to meet specifications for source control.	3C
		9.2	Frame agreements for installation support vessels (ISVs) require vessels to maintain in-force safety case approvals covering ROV operations and provide support in the event of an emergency.	1, 3B, 3C
		9.3	MODU and vessel contracts include clause outlining requirement for support in the event of an emergency	1, 3C
10	Safety Case	10.1	Woodside will prioritise MODU or vessel(s) for intervention work(s) that have an existing safety case	1, 3C

Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
		10.2	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
		10.3	Woodside will maintain minimum safe operating standards that can be provided to MODU and vessel operators for Safety Case guidance.	1, 3C

The resulting source control capability has been assessed against the WCCS. The range of techniques provide a feasible and viable approach to relief well drilling operations to stop the well flowing.

- The health and safety, financial, capital and operations/maintenance costs of implementing the alternative, additional or improved control measures identified and not carried forward are considered grossly disproportionate to the insignificant environmental benefit gained and/or not reasonably practicable for this PAP.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.2.

5.3 Source Control via vessel Shipboard Oil Pollution Emergency Plan (SOPEP)

Vessel source control will be conducted, where feasible and in accordance with MARPOL 73/78 Annex I, by the Vessel Master under the Shipboard Oil Pollution Emergency Plan (SOPEP) triggered by any loss of containment from the PAP vessels.

The SOPEP provides guidance to the Master and Officers on board the vessel with respect to the extra steps to be taken when an unexpected pollution incident has occurred or is likely to occur. The SOPEP contains all information and operational instructions required by IMO Resolution MEPC.54 (32) adopted on 6 March 1992, as amended by resolution MEPC.86 (44) adopted on 13 March 2000.

Its purpose is to set in motion the necessary actions to stop or minimise oil discharge and mitigate its effects and outlines responsibilities, pollution reporting requirements, procedures and resources needed in the event of a hydrocarbon spill from vessel activities.

In the event of the WCCS vessel collision event, the vessel master may engage precautionary marine manoeuvres to avoid collision or commence pumping operations to transfer marine diesel and thus minimise the release.

5.3.1 Environmental performance based on need

Woodside has established control measures, environmental performance outcomes, performance standards and measurement criteria to be used for vessel-source oil spill response during the PAP which are detailed in Section 6.7 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.5.

Performance standards for each contracted PAP vessel are detailed in the vessel's specific SOPEP.

These standards maintain availability of sufficient resources and are adequately tested for successful implementation of the SOPEP in the event of a hydrocarbon spill.

5.4 Shoreline Protection and Deflection

The placement of containment, protection or deflection booms on and near a shoreline is a response technique to reduce the potential volume of hydrocarbons contacting or spreading along shorelines, which may reduce the scale of shoreline clean-up. Hydrocarbons contained by the booms would be collected where practicable.

Shorelines would be protected where accessible via vessel or shore. Where hydrocarbon contact has already occurred, there may still be value in deploying protection equipment to limit further accumulations and preventing remobilisation of stranded hydrocarbons.

Shoreline protection and deflection equipment would be mobilised to selected locations, where the following conditions were met:

- Sea-states and hydrocarbon characteristics are safe to deploy protection and deflection measures,
- Oil trajectory has been identified as heading towards identified RPAs.

5.4.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- The shortest timeframe that shoreline contact from floating oil is predicted is 0.6 days (MEE-02) at Dampier Archipelago, Keast island and Legendre Island with shoreline accumulation peaking at Dampier Archipelago at approximately 325 m^3 on day 2 (MEE-02).
- Pre-emptive assessment and SCAT will be mobilised to RPAs contacted at 100 g/m^2.
- The duration of the spill may be up to 16 hours (MEE-02) or 77 days (MEE-01) with shoreline response operations extending to 2-3 months based on the predicted time to complete shoreline clean-up operations.
- Arrangements for support organisations who provide specialist services (trained personnel, protection and deflection equipment) and/or resources and should be tested regularly.
- Tactical Response Plans (TRPs) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents need to be in place for Operational and Support Sections. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for Shoreline Protection and Deflection. These assumptions have been described in the table below.

Table 5-4: Response Planning Assumptions – Shoreline Protection and Deflection

Response Planning Assumptions	
Safety considerations	Shoreline protection and deflection operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • safe for deployment and conditions within range of vessels • high ambient temperatures.
Shoreline protection and deflection	One shoreline protection and deflection operation may include; • Quantity of shoreline sealing boom (as outlined in TRP) • Quantity of fence or curtain boom (as outlined in TRP) • 1-2 trained supervisors • 8-10 personnel/ labour hire Specific details of each operation would be tailored to the Tactical Response Plan implemented (where available).

5.4.2 Environmental performance based on need

Table 5-5: Environmental Performance – Shoreline protection and deflection

Environmental Performance Outcome		To stop hydrocarbons encountering particularly sensitive areas		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
11	Response teams	11.1	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 12 hours of a predicted impact.	1, 3A, 3C, 4
		11.2	In liaison with WA DoT (for Level 2/3 incidents), mobilise teams to RPAs within 24 hours of a predicted impact. Teams to contaminated RPAs comprised of: • 1-2 trained specialists per operation • 8-10 personnel/labour hire • Personnel sourced through resource pool.	1, 2, 3B, 3C, 4
		11.3	In liaison with WA DoT (for Level 2/3 incidents), 1 operation mobilised to each identified RPA.	1, 3A, 3B, 4
		11.4	12 trained personnel available within 24 hours. Sourced through resource pool.	1, 2, 3A, 3B, 3C, 4
		11.5	Open communication line to be maintained between IMT and infield operations to confirm awareness of progress against plan(s)	1, 3A, 3B
		11.6	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
12	Response equipment	12.1	Equipment mobilised from closest location within 24 hours of a predicted impact.	1, 3A, 3C, 4
		12.2	Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles within 48 hours.	1, 3C, 3D, 4
		12.3	Supplementary equipment mobilised from OSRL within 48 hours.	
		12.4	Woodside maintains integrated fleet of vessels. Additional vessels can be sourced through existing contracts/frame agreements	1, 3A, 3C, 4
13	Management of Environmental Impact of the response risks	13.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		13.2	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:

- Existing capability allows for mobilisation and deployment of 1-2 shoreline protection operations within 24-48 hours (if required). The existing capability is predicted to meet the response need by day 3.
- The most significant constraint on expanding the scale of response operations is the availability of accommodation and transport services in the region between Exmouth and Port Hedland, and the management of response generated waste. From previous assessment of accommodation in this region, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day for an ongoing operation.
- TRPs have been developed for all identified RPAs excepting international locations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.4.

5.5 Shoreline Clean-up

Shoreline clean-up may be undertaken using a broad range of techniques when floating hydrocarbons contact shorelines. The timing, location and extent of shoreline clean-up activities can vary from one scenario to another, depending on the hydrocarbon type, sensitivities and values contacted, shoreline type and access, degree of oiling, and area oiled.

Shoreline clean-up is typically undertaken as a three-phase process:

- phase one (gross contamination removal) involving the collection of bulk oil, either floating against the shoreline or stranded on it
- phase two (moderate to heavy contamination removal) involving removal or in-situ treatment of shoreline substrates such as sand or pebble beaches, and
- phase three (final treatment or polishing) involving removal of the remaining residues of oil.

As phase one typically involves recovery of floating and pooled oil, and phase three removes minor volumes, they have not been considered in the assessment of response need for the scenarios identified.

The *Shoreline Clean-up Operational Plan* details the mobilisation and resource requirements for a shoreline clean-up operation including the logistics, support and facility arrangements to manage the movement of personnel and resources.

The *Shoreline Clean-up Operational Plan* includes the process for the IMT to mobilise resources depending on the nature and scale of the spill. Woodside would activate and mobilise trained and competent personnel in shoreline assessment before or following shoreline contact at response thresholds.

Shoreline clean-up consists of different manual and mechanical recovery techniques to remove hydrocarbons and contaminated debris from a shoreline; this is to minimise ongoing environmental contamination and impact. The National Plan also provides guidance on shoreline clean-up techniques as outlined in National Plan Guidance *Response assessment and termination of cleaning for oil contaminated foreshores* (AMSA 2015).

5.5.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- The shortest timeframe that shoreline contact from floating oil is predicted is 0.6 days (MEE-02) at Dampier Archipelago, Keast island, Legendre Island with shoreline accumulation peaking at Dampier Archipelago at approximately 325 m^3 on Day 2 (MEE-02).
- The duration of the spill may be up to 16 hours (MEE-02) with shoreline response operations extending up to 2-3 months based on the predicted time to complete shoreline clean-up operations.
- Pre-emptive assessment and SCAT will be mobilised to RPAs contacted at 100 g/m^2.
- Following SCAT and agreement of prioritisation with WA Department of Transport, clean-up operations would commence until agreed termination criteria are reached.
- Arrangements for support organisations who provide specialist services (trained personnel, labour hire, shoreline clean-up, and site management equipment) and/or resources and should be tested regularly.
- Tactical Response Plans (TRPs) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents should be in developed and in place for Operational and Support Sections. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for shoreline clean-up. These assumptions have been described in the table below.

Table 5-6: Response Planning Assumptions – Shoreline Clean-up

Response planning assumptions: Shoreline clean-up	
Safety considerations	Shoreline clean-up operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • waves and/or sea states, tidal cycle and intertidal zone limits • presence of wildlife high ambient temperatures.
Manual shoreline clean-up operation (Phase 2)	One, manual shoreline clean-up operation (Phase 2) may include: • 1–2 x trained supervisor • 8–10 x personnel/ labour hire • Supporting equipment for manual clean-up including rakes, shovels, plastic bags etc.
Physical properties	Surface Threshold • Lower – 100 g/m^2–100% coverage of 'stain' – cannot be scratched off easily on coarse sediments or bedrock – Expected trigger to undertake detailed shoreline survey • Optimum – 250 g/m^2 – 25% coverage of 'coat' – can be scratched off with a fingernail on coarse sediments – Expected trigger to commence clean-up operations
Efficiency **(m^3 oil recovered per person per day)**	Manual shoreline clean-up (Phase 2) – approximately 0.25–1 m^3 oil recovered per person per 10 hour day is based on moderate to high coverage of oil (100 g/m^2–1000 g/m^2) with manual removal using shovels/rakes, etc. from studies of previous response operations and exercises

Table 5-7: Shoreline Clean-up techniques and recommendations

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Natural recovery	Allowing shoreline to self-clean; no intervention undertaken.	Remote and inaccessible shorelines for personnel, vehicles and machinery. Other clean-up techniques may cause more damage than allowing the shoreline to naturally recover. Natural recovery may be recommended for areas with mangroves and coral reefs due to their sensitivity to disturbance from other shoreline clean-up techniques. High-energy shorelines: where natural removal rates are high, and hydrocarbons will be removed over a short timeframe.	Low-energy shorelines: these areas tend to be where hydrocarbon accumulates and penetrates soil and substrates.	May be employed, if the operational NEBA identifies that other clean-up techniques will have a negligible or negative environmental impact on the shoreline. May also be used for buried or reworked hydrocarbons where other techniques may not recover these.
Manual recovery	Use of manpower to collect hydrocarbons from the shoreline. Use of this form of clean-up is based on type of shoreline.	Remote and inaccessible shorelines for vehicles and machinery. Areas where shorelines may not be accessible by vehicles or machinery and personnel can recover hydrocarbons manually. Where hydrocarbons have formed semi-solid to solid masses that can be picked up manually. Areas where nesting and breeding fauna cannot or should not be disturbed.	Coral reef or other sensitive intertidal habitats, as the presence of a response may cause more environmental damage then allowing them to recover naturally. For some high-energy shorelines such as cliffs and sea walls, manual recovery may not be recommended as it may pose a safety threat to responders.	May be used for sandy shorelines. Buried hydrocarbons may be recovered using shovels into small carry waste bags, but where possible the shoreline should be left to naturally recover to prevent any further burying of hydrocarbons (from general clean-up activities).

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Sorbents	Sorbent boom or pads used to recover fluid or sticky hydrocarbons. Can also be used after manual clean-up to remove any residues from crevices or from vegetation.	When hydrocarbons are free-floating close to shore or stranded onshore. As a secondary treatment method after hydrocarbon removal and in sensitive areas where access is restricted.	Access for deploying and retrieving sorbents should not be through soft or sensitive habitats or affect wildlife.	Used for rocky shorelines. Sorbent boom will allow for deployment from small shallow draught vessels, which will allow deployment close to shore where water is sheltered and to aid recovery. Sorbents will create more solid waste compared with manual clean-up, so will be limited to cleaning rocky shorelines.
Vacuum recovery, flushing, washing	The use of high volumes of low-pressure water, pumping and/or vacuuming to remove floating hydrocarbons accumulated at shorelines.	Suited to rocky or pebble shores where flushing can remobilise hydrocarbons (to be broken up) and aid natural recovery. Any accessible shoreline type from land or water. May be mounted on barges for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites. Flushing and vacuum may be useful for rocky substrate. Medium- to high-energy shorelines where natural removal rates are moderate to high. Where flushed hydrocarbons can be recovered to prevent further oiling of shorelines.	Areas of pooled light, fresh hydrocarbons may not be recoverable via vacuum due to fire and explosion risks. Shorelines with limited access. Flushing and washing not recommended for loose sediments. High-energy shorelines where access is restricted.	High volume low pressure (HVLP) flushing and washing into a sorbent boom could be used for rocky substrate, if protection booming has been unsuccessful in deflecting hydrocarbons from these areas.
Sediment reworking	Movement of sediment to surf to allow hydrocarbons to be removed from the sediment and move sand via heavy machinery.	When hydrocarbons have penetrated below the surface. Recommended for pebble/cobble shoreline types. Medium- to high-energy shorelines where natural removal rates are moderate to high.	Low-energy shorelines as the movement of substrate will not accelerate the natural cleaning process. Areas used by fauna which could potentially be affected by remobilised hydrocarbons.	Use of wave action to clean sediment: appropriate for sandy beaches where light machinery is accessible.

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Vegetation cutting	Cutting vegetation to prevent oiling and reduce volume of waste and debris.	Vegetation cutting may be recommended to reduce the potential for wildlife being oiled. Where oiling is restricted to fringing vegetation.	Access in bird-nesting areas should be restricted during nesting seasons. Areas of slow-growing vegetation.	May be used on shorelines where vegetation can be safely cleared to reduce oiling.
Cleaning agents	Application of chemicals such as dispersants to remove hydrocarbons.	May be used for manmade structures and where public safety may be a concern.	Natural substrates and in low-energy environments where sufficient mixing energy is not present.	Not recommended for shorelines. Could be used for manmade structures such as boat ramps.

5.5.2 Environmental performance based on need

Table 5-8: Environmental Performance – Shoreline Clean-up

Environmental Performance Outcome		To remove bulk and stranded hydrocarbons from shorelines and facilitate shoreline amenity habitat recovery.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
14	Shoreline responders	14.1	In liaison with WA DoT (for Level 2/3 incidents), deployment of shoreline clean-up teams to contaminated RPAs comprised of: • 1-2 trained specialists per operation • 8-10 personnel/labour hire • Personnel sourced through resource pool within 48 hours of request from the IMT.	1, 2, 3A, 3B, 3C, 4
		14.2	Relevant Tactical Response Plans (TRPs) will be identified in the first strike plan for activation within 12 hours of a predicted impact.	1, 3A, 3C, 4
		14.3	Clean-up operations for shorelines in line with results and recommendations from SCAT outputs	1, 3A, 3B
		14.4	All shoreline clean-up sites will be zoned and marked before clean-up operations commence to prevent secondary contamination and minimise the mixing of clean and oiled sediment and shoreline substrates	
		14.5	In liaison with WA DoT (for Level 2/3 incidents), mobilise and deploy 1-2 shoreline clean-up operations within 24 hours.	
		14.6	The safety of shoreline response operations will be considered and appropriately managed. During shoreline clean-up operations: • All personnel in a response will receive an operational/safety briefing before commencing operations • Gas monitoring and site entry protocols will be used to assess safety of an operational area before allowing access to response personnel	1, 3B, 4
		14.7	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
15	Shoreline clean up equipment	15.1	Contract in place with 3rd party providers to access equipment.	1, 3A, 3C, 4
		15.2	Equipment mobilised from closest stockpile (detail in activity specific ALARP) within 24 hours.	
		15.3	Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles within 48 hours.	1, 3C, 3D, 4
		15.4	Supplementary equipment mobilised from OSRL within 48 hours.	
17	Management of Environmental Impact of the response risks	16.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		16.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		16.3	Vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves	
		16.4	Removal of vegetation will be limited to moderately or heavily oiled vegetation	
		16.5	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations.	

Environmental Performance Outcome	To remove bulk and stranded hydrocarbons from shorelines and facilitate shoreline amenity habitat recovery.		
Control measure	**Performance Standard**		**Measurement Criteria (Section 5.10)**
	16.6	Oversight by trained personnel who are aware of the risks.	
	16.7	Trained unit leaders will brief personnel prior to operations of the environmental risks of presence of personnel on the shoreline.	

The resulting shoreline clean-up capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to shoreline clean-up at identified RPAs. Woodside's capability can cover all required shoreline clean-up operations for the PAP.

Whilst modelling predicts shoreline contact from Day 0.6, with peak volumes accumulating on Day 2-3, at Dampier Archipelago, Keast Island, Legendre Island (MEE-02), Woodside is satisfied that the current capability is managing risks and impacts to ALARP.

The capability available meets the need identified for this activity. The shoreline clean-up capability has the following expected performance (if required during a response):

- Woodside has the capacity to mobilise and deploy up to 3-5 shoreline clean-up teams (approximately 45-60 responders in total) within 3 days using existing labour hire contracts with Woodside, AMOSC, Core Group, AMSA and OSRL team leads.
- Assessment of response capability indicates that for a worst-case scenario the actual teams required would meet the available capability by day 7 and the response would extend for up to 2-3 months.
- Woodside has considered deployment of additional personnel to undertake shoreline clean-up operations but is satisfied that the identified level of resource is balanced between cost, time and effectiveness. The most significant constraint on expanding the scale of response operations is the availability of accommodation and transport services in the region between Exmouth and Dampier and management of response generated waste. From previous assessment of accommodation in Exmouth/ Onslow/ Dampier/ Karratha/ Port Hedland, Woodside estimates that current accommodation can cater for a range of 700 personnel per day for an ongoing operation.
- TRPs have been developed for all identified RPAs excepting international locations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.5

5.6 Oiled wildlife response (including hazing)

Oiled wildlife response (OWR) includes wildlife surveillance/reconnaissance, wildlife hazing, pre-emptive capture, and the capture, cleaning, treatment, and rehabilitation of animals that have been oiled. In addition, it includes the collection, post-mortem examination, and disposal of deceased animals that have succumbed to the effects of oiling.

For a petroleum activity spill in Commonwealth waters, Woodside will act as the Control Agency and will be responsible for the wildlife response. In such circumstances, Woodside would implement a response in accordance with the *Oiled Wildlife Operational Plan*, the WA Oiled Wildlife Response Plan (WAOWRP) (DBCA, 2022a) and the WA OWR Manual (DBCA, 2022b). The *Oiled Wildlife Operational Plan* includes the process for the IMT to mobilise resources depending on the nature and scale of the spill. Oiled wildlife operations would be implemented with advice and assistance from the Oiled Wildlife Advisor from the Department of Biodiversity, Conservation and Attractions (DBCA).

The key plan for OWR in WA is the WAOWRP (DBCA, 2022a). The WAOWRP establishes the framework for preparing and responding to potential or actual wildlife impacts during a spill and sets out the management arrangements for implementing an OWR in conjunction with the DoT *State Hazard Plan – Maritime Environmental Emergencies* (SHP-MEE). It is the responsibility of DBCA to administer the WAOWRP under the direction of the DoT. The WA OWR Manual (DBCA, 2022b) supports, and should be used in conjunction with, the WAOWRP. The purpose of the WA OWR Manual is to standardise the operating procedures, protocols and processes for an OWR during a spill event in WA waters, and to create alignment between the wildlife response processes and the overall incident response (DBCA, 2022b).

If a spill occurs in WA State waters or enters State waters, DBCA is the Jurisdictional Authority for wildlife, for level 2/3 spills, and will also lead the oiled wildlife response under the control of the DoT. DBCA is the State Government agency responsible for administering the *Biodiversity Conservation Act 2016 (BC Act)* which has provisions for authorising activities that affect wildlife.

For level 1 spills in State waters, Woodside will be the Control Agency, including for wildlife response. It is, however, also an expectation that for level 2/3 petroleum activity spills, Woodside will conduct the initial first-strike response actions for wildlife response and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

Woodside retains specialist personnel to support and manage oiled wildlife operations, including trained and competent responders for deployment in Exmouth and Dampier. Additional personnel would be sourced through Woodside's arrangements to support an oiled wildlife response as required.

5.6.1 Response need based on predicted consequence parameters

Wildlife response priority areas and assessment of wildlife impact

French-McCay et al. (2002), based on a review of existing literature at the time, determined lethal thresholds for floating and shoreline oil for the external coating of wildlife to be 10 g/m^2 for floating, and 100 g/m^2 for shoreline accumulation. It should however be noted that toxicity thresholds for wildlife are likely to be highly variable due to differences in species sensitivity, type of hydrocarbon, type of exposure (ingestion or external oiling), life-stage, and on-water versus land habitat.

For planning purposes, determination of wildlife priority protection areas is based on stochastic modelling of the worst-case spill scenarios at 10 g/m^2 for floating, and 100 g/m^2 for shoreline accumulation (acknowledging that impacts to wildlife may occur at lower concentrations), the known presence of wildlife, and in consideration of the following:

- Presence of high densities of wildlife, threatened species, and/or endemic species with high site fidelity
- Greatest probability of shoreline accumulation
- Shortest timeframe to contact

Table 5-9 outlines the wildlife response areas for this activity. At the time of a spill, identification and allocation of wildlife RPA's should also take into consideration any key biological activities. Additional detail regarding species and their key biological activities within the vicinity of the PAP are described in Section 4 of the [Environment Plan name].

For WA, the Pilbara and Kimberley Regional Oiled Wildlife Plans (DBCA [formerly Department of Parks and Wildlife), 2014) provide useful information relating to wildlife priority response areas in their respective regions.

Table 5-9: Key at-risk species potentially in Response Protection Areas and open ocean where there is 10 g/m^2 floating or 100 g/m^2 shoreline

Species	Dampier Archipelago (Including Dampier AMP, Cape Bruguieres, Cohen Island, Keast Island, Kendrew Island, Legendre Island)	Exmouith Coastline (Including Ningaloo WH and Ningaloo MP State)	Montebello AMP
Marine turtles	✓	✓	✓
Whale sharks		✓	✓
Seabirds and/or migratory shorebirds	✓	✓	✓
Cetaceans – migratory whales	✓	✓	✓
Cetaceans – dolphins and porpoises	✓	✓	✓
Dugongs	✓	✓	✓
Sharks and rays	✓	✓	✓

The following statements identify the key parameters upon which a wildlife response need can be based:

- Floating oil at >10 g/m^2 is predicted at Hammersely Shoal within 0.8 days (MEE-02). However, this reef is submerged and floating oil will not accumulate therefore this response strategy is not feasible for this location.
- The shortest timeframe for shoreline accumulation at response thresholds (>100 g/m^2) is predicted to be 0.6 days at Dampier Archipelago (13 m^3), Keast Island (4 m^3), and Legendre Island (11 m^3) (MEE-02).
- At sea there are likely to be low numbers of at risk or impacted wildlife, and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and scientific monitoring are more likely to be the focus of response efforts.
- As the surface oil approaches shorelines and as oil accumulates on the shoreline, potential for oiled wildlife impacts is likely to increase as well as opportunities to rescue wildlife.
- It is estimated that the wildlife impact would be between medium and high, as defined in the WAOWRP (DBCA, 2022a) (Table 5-10).

Table 5-10: WAOWRP Guide for rating wildlife impact of an oil spill (DBCA, 2022)

Wildlife Impact Rating	Low	Medium	High
What is the likely duration of the wildlife response?	<3 days	3-10 days	>10 days
What is the likely total intake of animals?	<10	11-25	>25
What is the likely daily intake of animals?	0-2	2-5	>5
Are threatened species, or species protected by treaty, likely to be impacted, either directly or by pollution of habitat or breeding areas?	No	Yes – possible	Yes – likely
Is there likely to be a requirement for building primary care facility for treatment, cleaning and rehabilitation?	No	Yes – possible	Yes – likely

Tactics

Where there is imminent or actual impact to wildlife, Woodside will activate the Wildlife Division and follow the oiled wildlife incident management framework and implementation plan outlined in the Woodside *Oiled Wildlife Operational Plan*.

In Commonwealth waters, Woodside will be responsible for the planning and implementation of the OWR in its entirety. Noting that at sea, and in comparison to the shoreline, there are likely to be less wildlife impacted by an oil spill and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and integration with scientific monitoring are more likely to be the focus of the OWR.

In State waters, Woodside will conduct the initial first-strike response actions for wildlife and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

If a protracted response is likely, requiring preventative actions and/or wildlife rescue, and formal hand over to the Control Agency (in State waters) has not yet occurred, the Wildlife Division will be responsible for the development of the Wildlife Division portion of the IAP. Preventative actions, such as hazing, along with capture, intake and treatment require a higher degree of planning, approval (licenses) and skills and will be planned for and carried out under the IAP as outlined in the *Oiled Wildlife Operational Plan* and in accordance with the WAOWRP (DBCA, 2022a) and WA OWR Manual (DBAC, 20022b).

The oiled wildlife response technique targets key wildlife populations at risk within Commonwealth open waters and the nearshore waters as described in **Section 4** of the EP.

5.6.2 Environmental performance based on need

Table 5-11: Environmental Performance – Oiled Wildlife Response (OWR)

Environmental Performance Outcome		OWR is conducted in accordance with the Western Australian Oiled Wildlife Response Plan (WAOWRP, 2022) to meet legislative requirements to house, release or euthanise wildlife under the *Biodiversity Conservation Act 2016*.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
17	Oiled wildlife response arrangements	17.1	Oiled Wildlife Operational Plan in place and utilised during a response to plan, coordinate, implement and terminate operations	1, 3A, 4
		17.2	Initiate a wildlife first strike response within 24 hours of confirmed or imminent wildlife contact as directed by OMP: Marine Fauna Assessment and in liaison with DBCA.	1
18	Oiled wildlife response equipment	18.1	Maintain contract with AMOSC for immediate access to oiled wildlife response equipment.	1, 3C, 3D, 4
		18.2	Maintain contract with OSRL to access additional oiled wildlife response equipment.	1, 3C, 3D, 4
19	Oiled wildlife responders	19.1	Two Oiled Wildlife Team Members to supervise the oiled wildlife operations who have completed an OWR Management course.	1, 2, 3B
		19.2	Maintain contract with AMOSC for immediate access to trained oiled wildlife response specialists	1, 3B, 3C
		19.3	Maintain contract with OSRL to access additional trained OWR specialists	1, 3B, 3C
		19.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
20	Management of environmental impacts of response risks	20.1	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 to identify wildlife and RPAs contacted or at imminent risk of contact by hydrocarbons.
- availability and mobilisation of trained OWR personnel to supervise OWR activities.
- access to wildlife resources (personnel and equipment) to meet the needs where there are medium or high levels of wildlife impact.

5.7 Waste Management

Waste management is considered a support technique to wildlife response, containment and recovery and shoreline clean-up. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during shoreline clean-up and wildlife response, and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) and debris (e.g. seaweed, sand, woods, and plastics) collected during shoreline clean-up and wildlife response.

Expected waste volumes during an event are likely to vary depending on oil type, volume released, response techniques employed and how weathering of hydrocarbons. Waste management, handling and capacity should be scalable to maintain continuous response operations.

All waste management activities will follow the Environment Protection (Controlled Waste) Regulations 2004 and the waste will be managed to minimise final disposal volumes. Waste treatment techniques will consider contaminated solids treatment to allow disposal to landfill and solids with high concentrations of hydrocarbon will be treated and recycled where possible or used in clean fill if suitable.

The waste products would be transported from response locations to the nearest suitable staging area/waste transfer station for treatment, disposal or recycling. Waste will be transferred with appropriately licensed vehicles. Containers will be available for temporary waste storage and will be:

- labelled with the waste type
- provided with appropriate lids to prevent waste being blown overboard
- bunded if storing liquid wastes.
- processes will be in place for transfers of bulk liquid wastes and include:
  - inspection of transfer hose undertaken prior to transfer
  - watchman equipped with radio visually monitors loading hose during transfer
  - tank gauges monitored throughout operation to prevent overflow

The *Oil Spill Preparedness Waste Management Support Plan* details the procedures, capability and capacity in place between Woodside and its primary waste services contractor to manage waste volumes generated from response activities.

5.7.1 Response need based on predicted consequence parameters

Table 5-12: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	Shoreline clean-up (manual) – approximately 5-10 multiplier for oily solid and liquid wastes generated by manual clean-up.
	Oiled wildlife response – approximately 1 m^3 of oily solid and liquid waste generated for each wildlife unit cleaned

5.7.2 Environmental performance based on need

Table 5-13: Environmental Performance – Waste Management

Environmental Performance Outcome		To minimise further impacts, waste will be managed, tracked and disposed of in accordance with laws and regulations.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
21	Waste Management	21.1	Contract with waste management services for transport, removal, treatment and disposal of waste	1, 3A, 3B, 3C, 4
		21.2	Access to at least 675 m^3 of solid and liquid waste storage available within 4 days upon activation of 3rd party contract.	
		21.3	Access to up to 16,800 m^3 by week 2	
		21.4	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		21.5	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		21.6	Open communication line to be maintained between IMT and waste management services to ensure the reliable flow of accurate information between parties.	1, 3A, 3B
		21.7	Waste management to be conducted in accordance with Australian laws and regulations	1, 3A, 3B, 3C, 4
		21.8	Waste management services available and employed during response	
22	Management of environmental impacts of response risks	22.1	Teams will segregate liquid and solid wastes at the earliest opportunity.	1, 3A, 3B, 3C, 4

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management at identified RPAs.

The largest shoreline volumes ashore are predicted on day 2 at a maximum volume of 674 m^3 across all shorelines contacted at >100 g/m^2 1215 m^3 to 6025 m^3 of waste is the maximum expected across all shoreline clean-up operations across 7 days. The capability available exceeds the need identified from day 6.

It indicates that the waste management capability has the following expected performance:

- Shoreline and nearshore operations may generate up to 6025 m^3 over 7 days of operations (MEE-02).
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.6.
- Woodside's waste contractor has access to approximately 2400 m^3 to treat overall waste volumes by day 6 and up to 16,800 m^3 by week 2. The waste management requirements are within Woodside's and its service providers existing total capacity of 120,000 m^3.

5.8 Operational and Scientific monitoring

Operational and scientific monitoring (OSM) is instrumental in providing situational awareness of a hydrocarbon spill, enabling Incident Management Teams (IMTs) to mount a timely and effective spill response, continually monitor the effectiveness of the response and quantitively assess and monitor environmental impacts following a Level 2 or 3 unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors.

OSM is the principal tool for determining the extent, severity and persistence of possible environmental impacts from a hydrocarbon spill and for informing resultant remediation activities.

Woodside has elected to use the Joint Industry OSM Framework (AEP, 2021) and supporting Operational Monitoring Plans (OMPs) and Scientific Monitoring Plans (SMPs) as the foundation of its operational and scientific monitoring approach. It has developed an OSM Bridging Implementation Plan (BIP) which describes how the OSM Framework interfaces with its activities, spill risks and internal management systems.

OSM considers receptors at risk (ecological and socio-economic) for the predicted EMBA and, in particular, any identified priority first-strike baseline monitoring 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 2-2, Section 2.3.1.1). The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the EMBA.

5.8.1 OSM preparedness

OSM Framework

The Joint Industry OSM Framework (AEP, 2021) provides for a common set of OMPs and SMPs, including standardised guidance on aims, initiation and termination criteria, monitoring design, resource requirements and reporting procedures.

The OSM comprises targeted monitoring programs to assess the fate of the hydrocarbon spill (OM1-OM6) and the data to quantitatively assess environmental impacts (SM1-SM9) including 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/heritage values, such as fisheries, Table 5-14.

Table 5-14: Operational and Scientific monitoring programs

Operational Monitoring	Scientific Monitoring
OM1: Hydrocarbon Characterisation	SM1: Water Quality Impact Assessment
OM2: Hydrocarbon in Water Assessment	SM2: Sediment Quality Impact Assessment
OM3: Hydrocarbon in Sediment Assessment	SM3: Intertidal & Coastal Habitat Assessment
OM4: Dispersant Effectiveness Monitoring (Surface & Subsea)	SM4: Seabirds and Shorebirds Assessment
OM5: Rapid Marine Fauna Surveillance	SM5: Marine mega-fauna Assessment
OM6: Shoreline Clean-up Assessment (SCAT)	SM6: Benthic habitat Assessment
	SM7: Marine fish and elasmobranch assemblages assessment
	SM8: Fisheries Impact Assessment
	SM9: Heritage Features Assessment

These programs have been designed to cover the key tropical and temperate habitats and species within Australian waters and broader, as required.

Baseline Approach

Understanding the presence or absence, suitability and quality of baseline data for locations and associated receptors predicted to be contacted within 7 days is an important preparatory measure for OSM first-strike response. During a spill event, the first-strike monitoring capability will be prioritised to those receptors with insufficient baseline data (deemed first-strike monitoring priorities) to collect baseline data post-spill pre-impact. Further, where post-spill pre-impact monitoring is not feasible due to short contact times, understanding which receptors have insufficient baseline data will quickly help guide the finalisation of each SMP requirements and monitoring design as well as the need to include alternative designs such as gradient approach to replace a Before-After-Impact-Control (BACI) monitoring design. Locations with hydrocarbon contact predicted within 7 days for priority first-strike baseline monitoring are listed in Table 4.3 of the BIP for the Woodside combined EMBA and **ANNEX C**: PAP OSM baseline review.

OSM assessment for the PAP

The OSM planning area for the PAP has been set with reference to the entrained hydrocarbon concentration low exposure value of 10 ppb as detailed in NOPSEMA Bulletin #1 Oil Spill Modelling (2019) (see Figure 5-1). An adequacy check based on the OSM planning area for this PAP with the OSM-BIP was conducted and confirmed OSM requirements are met, refer to Table 5-15. Pre-identified first strike (<7 days and >10% probability) monitoring priority locations are detailed in **ANNEX C**: PAP OSM baseline review.

Table 5-15: Adequacy check of PAP OSM planning area and the OMS-BIP Combined EMBA and OSM requirements

Adequacy check criteria/steps	Evidence
1. Determine if new activity EMBA fits within OSM-BIP Combined EMBA	Map figure PAP OSM Planning area with BIP Combined EMBA
2. Determine the locations requiring a baseline review	Annex C
3. Determine whether the capability requirements and monitoring arrangements of the PAP are met as per OSM-BIP	Confirmed as met as PAP EMBA fits within OSM-BIP Combined EMBA Locations requiring baseline review check completed (Annex C)

It should be noted that the resulting OSM receptor locations differ from the spill response RPAs presented and discussed in Section 3 of this document due to the applicability of environmental hydrocarbon threshold levels which differ from response thresholds.

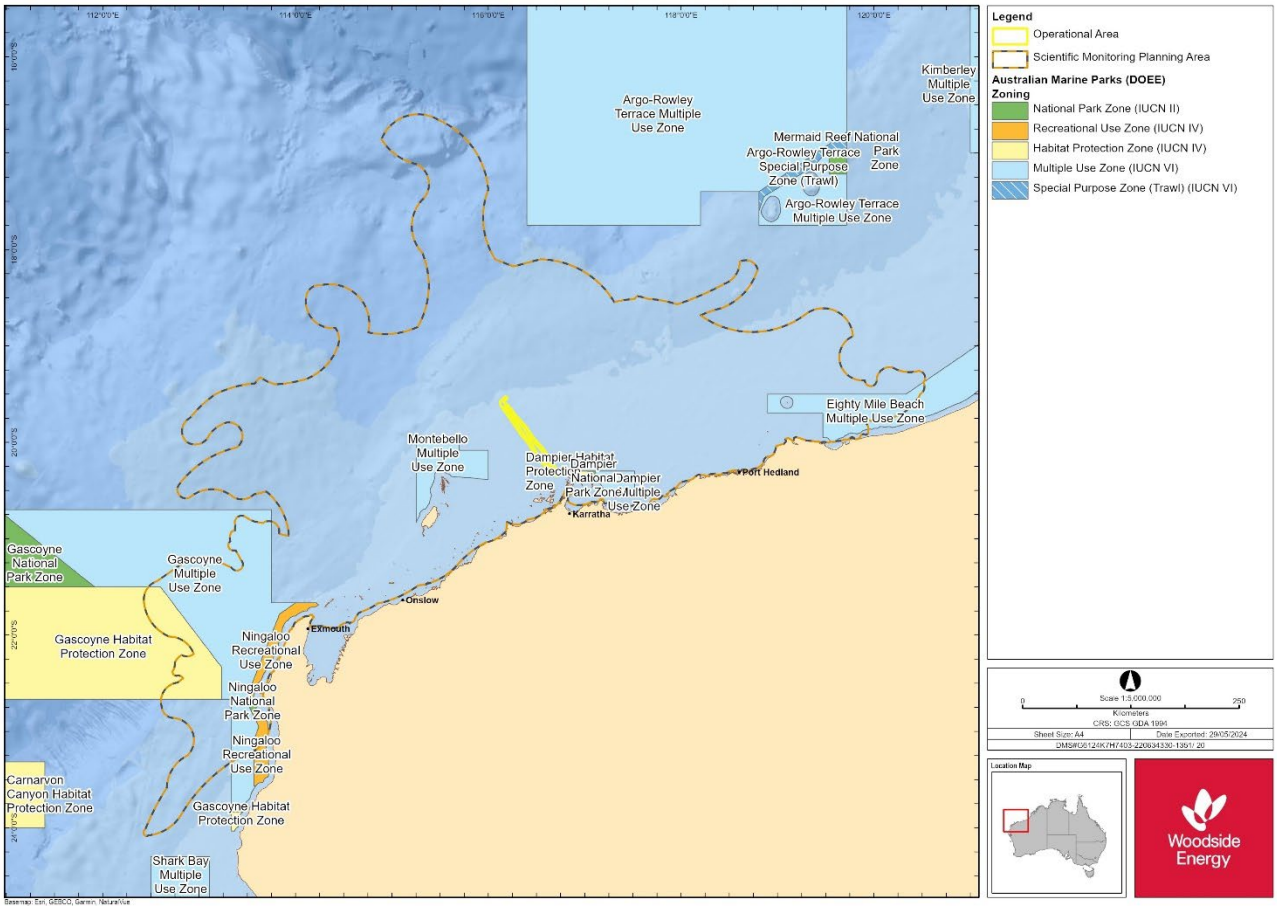

Figure 5-1: The planning area for scientific monitoring based on the area potentially contacted by the low (below ecological impact) entrained hydrocarbon threshold of 10 ppb in the event of the worst-case credible spill scenario (MEE-01, MEE-02 and MEE-05).

Please note that Figure 5-1 represents the overall combined extent of the oil spill model outputs based on a total of 100 replicate simulations (MEE-01) and 200 replicate simulations (MEE-02 and MEE-05) over an annual period and therefore represents the largest spatial

5.8.2 OSM response

OSM roles and responsibilities

The OSM Framework details the roles and responsibilities of the OSM.

Woodside's Incident Commander has accountability for the implementation of the OSM and the Environment Unit Lead is responsible for relaying information between the CIMT/IMT and the OSM Implementation Lead (typically filled by OSM service provider) as detailed in the OSM-BIP.

Table 5-16: OSM roles and responsibilities

Role	Key Responsibilities
Incident Commander	Ultimately accountable for the implementation of the OSM. Specific responsibilities related to the OSM include: • Ensure OSM-specific roles are established • Integrate operational and scientific monitoring with the spill response • Ensure that OMP and SMP components are implemented according to their specific initiation criteria and within nominated response times • Ensure that the OSM Implementation Lead and Environment Unit Lead are sufficiently resourced to oversee and guide implementation of OSM activities
Environment Unit Lead (EUL)	The EUL is the key position for relaying information between the IMT and the OSM Implementation Lead. Key OSM responsibilities include: • Mobilise OSM Service Provider

Role	Key Responsibilities
	• Validate protection and monitoring priorities with OSM Implementation Lead • Validate strategic SIMA to generate the initial operational SIMA • Main point of contact between IMT and OSM Service Provider • Provide overarching technical advice • Analysing data received from monitoring teams (this task may be delegated to OSM Management Team) and incorporating the information into the current/next operating period's Incident Action Plan • Advise on environmental impact from implementing monitoring • Management of scientific monitoring components once spill response operation is terminated (may be delegated once IMT is stood down following termination of response)
OSM Implementation Lead	Responsible for overseeing implementation of OMP and SMP components in accordance with this Plan, specifically: • Identify the relevant OMP and SMP components that may be triggered based on the information collected during the initial response and OMP monitoring • Implementing the relevant OMP and SMPs at the appropriate times • Liaise with EUL/Environment Advisor throughout monitoring period (response phase and post-response) • Confirm monitoring priorities with EUL and continually re-evaluate • Integrate any protected matters requirements into final monitoring designs • Approve monitoring designs and monitoring plans • Liaise with relevant stakeholders and regulators on monitoring design, monitoring priorities, and results
Operational Monitoring Coordinator and Scientific Monitoring Coordinator (Monitoring Provider)	The Operational Monitoring Coordinator and Scientific Monitoring Coordinator are the technical leads for each monitoring type. Responsibilities include: • Assist OSM Implementation Lead in finalising the monitoring design for individual OMPs and/or SMPs • Understand the data metrics collected in the event of a spill • Advise the OSM Implementation Lead on data collection, logistical support required, and monitoring priorities if constraints (e.g. safety, time, logistics) are encountered • Oversee data analyses and interpretation • Manage data, including spatial data • Present data in an appropriate and informative format to allow for timely decisions
OSM Field Operations Manager (Monitoring Provider)	Responsible for the coordination of resources and developing a schedule of movements, in close consultation with the IMT/EMT Logistics Section. Key responsibilities include: • Determine locations where monitoring teams are required and resource requirements for specific locations • Keep track of vessel/aerial movements associated with monitoring activities • Monitor resource availability • Direct communications with relevant Monitoring Coordinator and Field Team Leads • Monitor and coordinate simultaneous operations
OSM Field Teams (Monitoring Provider)	A Field Team includes one Field Team Lead, who is the key contact point to the relevant Monitoring Coordinator during a field deployment. The responsibilities of all Field Team members include: • Understand the details of monitoring methods • Supplying adequate equipment and field data collection sheets to undertake the monitoring component • Supporting awareness and understanding of QA/QC procedures • Help with report preparation if required

5.8.3 Summary – operational and scientific monitoring

The resulting OSM capability has been assessed against the PAP credible spill scenario(s) and OSM-BIP combined EMBA. Based on modelling for this PAP, no new locations have been identified with contact within 7 days further to those currently addressed in the BIP (**ANNEX C**: PAP OSM baseline review).

The range of techniques provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of environmental impacts.

The ALARP assessment for operational and scientific monitoring (Section 6.8) considers alternate, additional, and/or improved control measures on each selected response technique.

Known, reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be moderate and the overall delivery effectiveness determined to be medium. The OSM program's main objectives can be met, with no additional, alternative or improved control measures providing further benefit.

5.8.4 Environmental performance based on need

Table 5-17: Operational and scientific monitoring

Environmental Performance Outcome		Implement OSM programs to assess and report on the impact, extent, severity, persistence and recovery of sensitive receptors contacted by a spill or affected by spill response.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.10)**
23	OSM arrangements	23.1	Maintain access to OSM expertise qualified to fulfill OSM Implementation Lead role during a Level 2/3 spill event per Joint Industry OSM Framework requirements.	3A, 3B, 3C, 3D, 4
		23.2	OSM Implementation Lead responsible for overseeing implementation of OMP and SMP components in accordance with the Woodside OSM Bridging Implementation Plan.	
24	Access to adequate OSM capability to provide both first strike and ongoing monitoring	24.1	Maintain contract with third-party provider to provide access to suitably qualified and competent personnel and equipment to assist in the implementation of monitoring	3A, 3B, 3C, 3D, 4
		24.2	Obtain monthly capability reports from OSM Service Provider to demonstrate suitable resources are available throughout any activity	
		24.3	Annual testing of OSM Service Provider standby arrangements and activation process	
25	Baseline studies assurance	25.1	Annual review of environmental baseline data for all locations where spill modelling has predicted contact at relevant hydrocarbon thresholds	3D
26	OSM response	26.1	OMPs and SMPs will be activated in accordance with the initiation criteria provided in the Joint Industry OSM Framework	1
		26.2	Initiation criteria of OMPs and SMPs will be reviewed during the preparation of the initial Incident Action Plan (IAPs) and subsequent IAPs; and if any criteria are met, relevant OMPs and SMPs will be activated	
		26.3	OSM to be conducted in accordance with the Woodside OSM-BIP	
		26.4	Implementation of OSM will comply with the minimum standards listed in Appendix A of the Joint Industry OSM Framework	
		26.5	Once OSM data reports are drafted they will be peer reviewed by an expert panel for data integrity	
		26.6	OMPs and SMPs will be terminated in accordance with the termination criteria provided in the Joint Industry OSM Framework	
27	OSM-BIP maintenance	27.1	Annual review will be conducted according to the criteria in the OSM-BIP	3A, 3B, 3C, 3D, 4

5.9 Incident Management System (IMS)

The Incident Management System (IMS) is both a control measure and a measurement criteria. As a control measure the IMS function is to prompt, facilitate and record the completion of three key response planning processes detailed below. As a measurement criteria the IMS records the evidence of the timeliness of all response actions included in the environmental performance standards and the plans used of the PAP.

As the IMS does not directly remove hydrocarbons spilt into the marine environment there is no direct relationship to the response planning need.

5.9.1 Incident action planning

The CIMT will be required to collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an IAP and assist the IMT with the execution of that plan. The site-based IC may request the CIMT to complete notifications internally within Woodside, to relevant persons/ organisations and government agencies as required. Depending on the type and scale of the incident either the CIMT IC or Deputy IC will be responsible for ensuring the development of the IAP. Incident Action Planning is an ongoing process that involves continual review to confirm the appropriateness of techniques to control the incident for the situation at the time.

5.9.2 Operational NEBA process

In the event of a response Woodside will confirm that the response techniques adopted at the time of Environment Plan/ Oil Pollution Emergency Plan (EP/ OPEP) acceptance remain appropriate to reduce the consequences of the spill. This process verifies that there is a continuing net environmental benefit associated with continuing the response technique through the operational NEBA process. This process manages the environmental risks and impacts of response techniques during the spill response, An operational NEBA will be undertaken throughout the response, for each operational period.

The operational NEBA will consider the risks and benefits of conducting and response activity. For example, if vessels are required for access to nearshore or onshore areas, anchoring locations will be selected to minimise disturbance to benthic habitats. Vessel cleanliness would be commensurate with the receiving environment. The operational NEBA will consider the risks and benefits of conducting other response techniques.

The operational NEBA process is also used to terminate a response. Using data from operational and scientific monitoring activities the response to a hydrocarbon spill will be terminated in accordance with the termination process outlined in the Oil Pollution Emergency Arrangements (Australia). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

5.9.3 Consultation engagement process

Woodside will consult relevant persons/ organisations are engaged during the spill response in accordance with internal standards. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for relevant persons/ organisations in the region (identified in the First Strike Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

5.9.4 Environmental performance based on need

Table 5-18: 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 5.10)**
28	Operational SIMA	28.1	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
		28.2	Record the evidence and justification for any deviation from the planned response activities.	
		28.3	Record the information and data from operational and scientific monitoring activities used to inform the SIMA.	
29	Stakeholder engagement	29.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made	
		29.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		29.3	Undertake communications in accordance with: • Functional Support Team Guideline – Reputation • External Communication and Continuous Disclosure Procedure	
30	Personnel required to support any response	30.1	Action planning is an ongoing process that involves continual review to confirm the appropriateness of techniques to control the incident are appropriate to the situation at the time.	1, 3B
		30.2	A duty roster of trained and competent people will be maintained to maintain minimum manning requirements are met all year round.	3C
		30.3	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
		30.4	Collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an IAP and assist with the execution of that plan.	
		30.5	S&EM advisors will be integrated into CIMT to monitor performance of all functional roles.	
		30.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	
		30.7	Follow the OPEA, Operational Plans, FSPs, support plans and the IAPs developed.	1, 2, 3A, 4

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 5.10)**
		30.8	Contribute to Woodside's response in accordance with the aims and objectives set by the Incident Commander.	1, 2, 3B, 3C, 4

5.10 Measurement criteria for all response techniques

Woodside measures compliance with environmental performance outcomes and standards through four primary mechanisms. The aforementioned performance tables identify which of these four mechanisms monitors the readiness and records the effectiveness and performance of the control measures adopted.

1. The Incident Management System

The Incident Management System (IMS) supports the implementation of the Emergency and Crisis Management Procedure. The IMS provides a near real-time, single source of information for monitoring and recording an incident and measuring the performance of those control measures.

The Emergency and Crisis Management Procedure defines the management framework, including roles and responsibilities, to be applied to any size incident (including hydrocarbon spills). The organisational structure required to manage an incident is developed in a modular fashion and is based on the specific requirements of each incident. The structure can be scaled up or down.

The IAP process formally documents and communicates the:

- Incident objectives
- Status of assets
- Operational period objectives
- Response techniques (defined during response planning)
- The effectiveness of response techniques.

The information captured in the IMS (including information from personal logs and assigned tasks/close outs) confirms the response techniques implemented remain appropriate to reduce the consequences of the spill. The system also records all information and data that can be used to support the site-based IMT, development and the execution of the IAP.

2. The S&EM Competency Dashboard

The S&EM competency dashboard records the number of trained and competent responders that are available across Woodside, and some external providers, to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-2 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

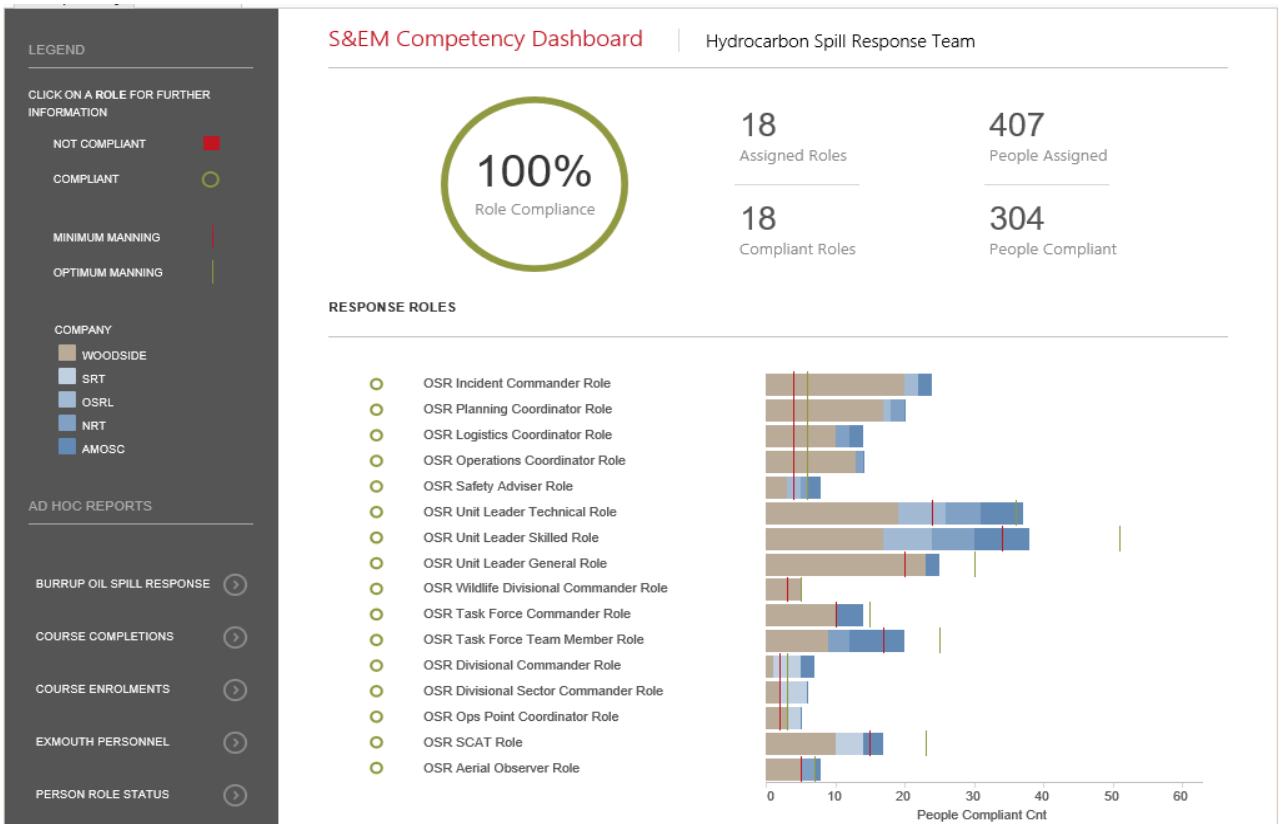

Figure 5-2: Example screenshot of the HSP competency dashboard

The Dashboard is one of Woodside's key means of monitoring its readiness to respond. It also demonstrates Woodside's ability to meet the requirements of the environmental performance standards that relate to filling certain response roles.

Figure 5-3 shows deeper dive into the Ops Point Coordinator role and the training modules required to show competence.

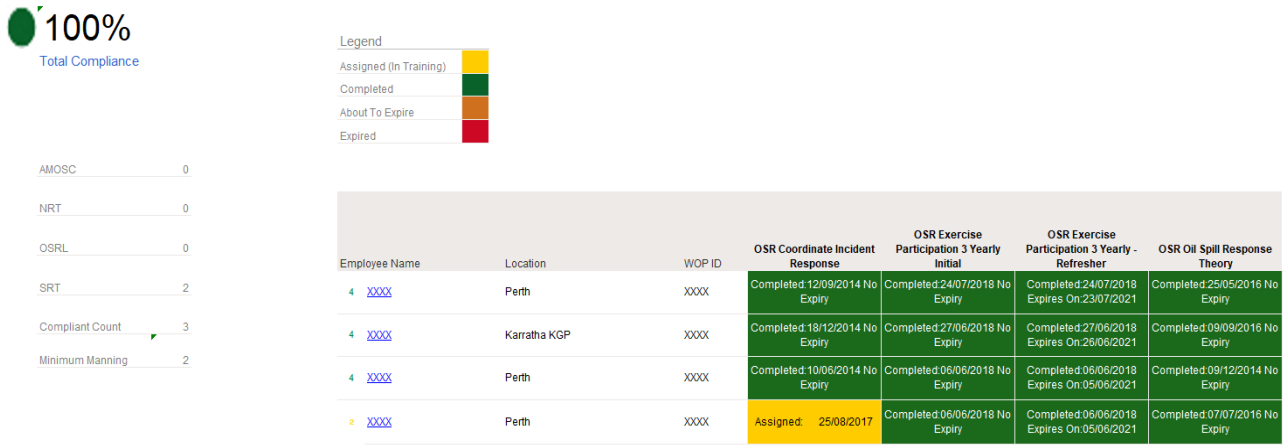

Figure 5-3: Example screenshot for the Ops Point Coordinator role

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 a hydrocarbon spill. The process tracks compliance over four key control areas:

a) **Plans** – confirms all plans (including: Oil Pollution Emergency Arrangements, first strike plans, operational plans, support plans and tactical response plans) are current and in line with regulatory and internal requirements.

b) **Competency** – confirms the competency dashboard is up to date and there are the minimum numbers across CIMT, CMT and hydrocarbon spill response roles. The hydrocarbon spill training plan and exercise schedule, including testing of arrangements is also tracked. The Testing of Arrangements (TOA) register tracks the testing of all hydrocarbon spill response arrangements, key contracts and agreements in place with internal and external parties to ensure compliance.

c) **Capability** – tracks and monitors capability that could be required in a hydrocarbon incident, including but not limited to: integrated fleet[11] vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.

d) **Compliance and Assurance** – confirms all regulator inspection outcomes are actioned and closed out, the global legislation register is up to date and that the key assurance components are tracked and managed. Assurance activities (including audits) conducted on memberships with key Oil Spill Response Organisations (OSROs) including AMOSC and OSRL are also tracked and recorded in the ICE.

The ICE assurance process records how each commitment listed in the performance tables above is managed for ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the S&EM Function.

The completion of the assurance checks (over and above the ICE process) is also applied via the Woodside Integrated Risk and Compliance System (WiRCs) and subject to the requirements of Woodside's Provide Assurance Procedure.

4. The Hydrocarbon Spill Preparedness and Response Procedure

This procedure sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this procedure does not apply to scenarios relating to gas releases in the marine environment).

This procedure details the:

- requirement for an Oil Pollution Emergency Plan (OPEP) to be developed, maintained, reviewed, and approved by appropriate regulators (where applicable) including:
  - defining how spill scenarios are developed on an activity specific basis
  - developing and maintaining all hydrocarbon spill related plans
  - ensuring the ongoing maintenance of training and competency for personnel
  - developing the testing of spill response arrangements
  - maintaining access to identified equipment and personnel.
- planning for hydrocarbon spill response preparedness
- accountabilities for hydrocarbon spill response preparedness
- spill training requirements
- requirements for spill exercising / testing of spill response arrangements
- spill equipment and services requirements.

The procedure also details the roles and responsibilities of the dedicated Woodside Hydrocarbon Spill Preparedness team. This team is responsible for:

- assuring that Woodside hydrocarbon spill responders meet competency requirements.
- establishing the competency requirements, annual training schedule and a training register of trained personnel.
- establishing and maintaining the total numbers of trained personnel required to provide an effective response to any hydrocarbon spill incident.
- ensuring equipment and services contracts are maintained
- establishing OPEPs
- establishing OPEAs
- priority response receptor determination
- ALARP determination

[11] 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

- 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 control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Aerostat (or similar inflatable observation platform) for localised aerial surveillance.	Lead time to Aerostat surveillance is disproportionate to the environmental benefit. The system also provides a very limited field of visibility around the vessel it is deployed from.	Long lead time to access (>10 days). Each system would require an operator to interpret data and direct vessels accordingly. Requires multiple systems for shoreline use.	Purchase cost per system approx. A$300,000.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**

6.1.1.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional personnel trained to use systems.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to monitoring data used to inform all other response techniques. No improvement required.	No improvement can be made, all personnel in technical roles e.g. intelligence unit are trained and competent on the software systems. Personnel are trained and exercised regularly. Use of the software and systems forms part of regular work assignments and projects.	Cost for training in-house staff would be approx. A$25,000.	This option is not adopted as the current capability meets the need.	**No**
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy on location at manned facility, additional needs are met from Woodside owned stocks in King Bay Support Facility (KBSF) and Exmouth or can be provided by service provider.	Cost for an additional satellite tracking buoy would be A$200 per day or A$6000 to purchase.	This option is not adopted as the current capability meets the need, but additional units are available if required.	**No**
Additional trained aerial observers.	Current capability meets need. Woodside has access to a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL.	Current capability meets need. Woodside has a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL Aviation standards & guidelines ensure all aircraft crews are competent for their roles. Woodside maintains a pool of trained and competent aerial observers with various home base locations to be called upon at the time of an incident. Regular audits of oil spill response organisations ensure training and competency is maintained.	Cost for additional trained aerial observers would be A$2000 per person per day.	This option is not adopted as the current capability meets the need, but additional observers are available via response contractors if required.	**No**

6.1.1.3 Improved Control Measures

Improved Control Measures considered
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented

Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has person on call to respond from their own location.	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of A$50,000 for 24hr access plus an initial A$5000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	**No**
Night time aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The images would be of low quality and as such the variable is not adopted.	Flights will only occur when deemed safe by the pilot. The risk of night operations, is disproportionate to the benefit gained, as images from sensors (IR, UV, etc). will be low quality. Flight time limitations will be adhered to.	No improvement can be made without risk to personnel health and safety and breaching Woodside's golden rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	**No**

6.1.2 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

6.2 Source Control – ALARP Assessment

Woodside has based its response planning on the worst-case credible scenarios (as described in Section 2.2). This includes the following selection of primary source control and well intervention techniques which would be conducted concurrently:

- direct ROV intervention on Xmas tree
- debris clearance and/or removal
- 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. Work class ROVs for well intervention are available through the existing frame agreements.

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.

Table 6-1: ROV timings

	Estimate ROV inspection duration for North Rankin Complex Facility Operations (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 Relief Well drilling

The options analysis detailed in this section considers options to source, contract and mobilise a MODU and ensure necessary regulatory approvals are in place to meet timelines for relief well drilling. The screening for relief well drilling MODUs is based on the following and the process used for North Rankin Complex Facility Operations is illustrated in Figure 6-1:

- Primary – review internal Woodside drilling programs and MODU availability to source an appropriate MODU operating within Australia with an approved Safety Case.
- Alternate – source and contract a MODU through AEP MOU that is operating within Australia with an approved Safety Case.
- Contingency – Source and contract a MODU outside Australia with an approved Australian Safety Case.

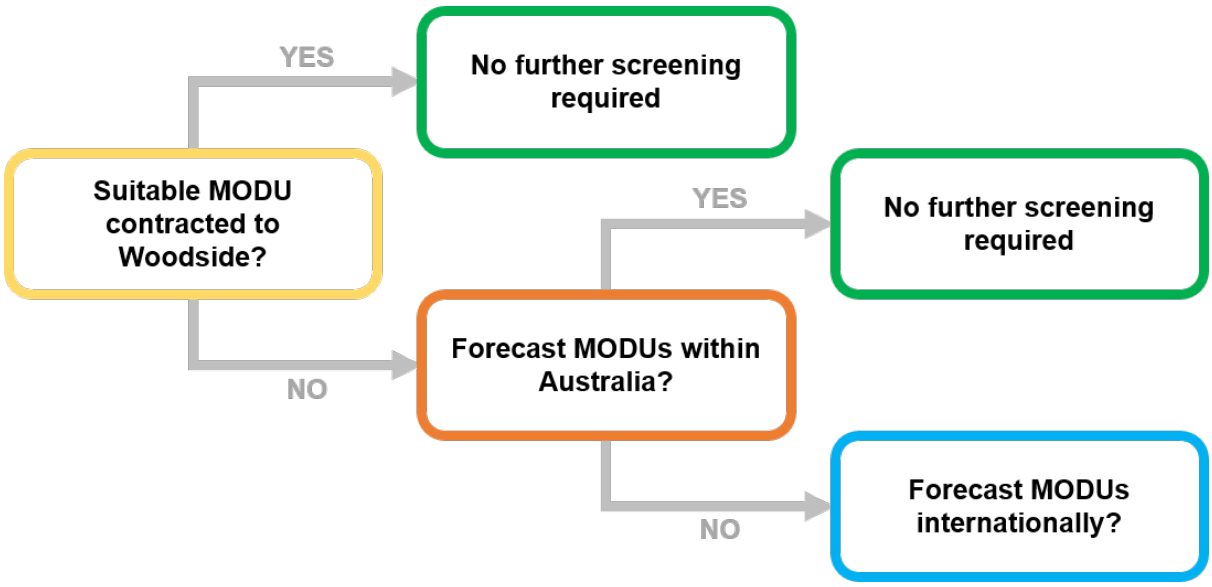

Figure 6-1: North Rankin Complex Facility Operations process for sourcing relief well MODU

Woodside has not assessed the timeframe for obtaining a relief well MODU through international supply for this project as the certainty of local supply has been confirmed. Screening of a relief well MODU from international waters is undertaken only if required, i.e. there is low confidence in local (Australian) availability. The screening of relief well MODUs is undertaken and presented at a well design stage peer assessment. The capability, location and Australian Safety Case status is assessed for each Woodside contracted MODU. In the event the Woodside contracted MODUs are unsuitable, screening is extended to all MODUs operating in Australian Waters. The suitability and location of pre-identified relief well MODUs is tested again prior to the operation. Though the AEP MoU will serve as the instrument to facilitate the transfer of drilling units and well site services between operators in the event of an emergency, Woodside will engage each of the identified titleholders in advance to maintain confidence in MODU suitability and availability.

Based on the detail provided, the Primary and Alternate approaches are expected to be achieved within the 21-day period.

The internal and external availability of moored MODUs, plus MODU activities of registered operators and MODUs with approved safety cases, are tracked by Woodside on a monthly basis to ensure that the best available option can be sourced and utilised in the event of the worst-case credible scenario.

If the above forecast indicates a gap in availability of a suitable MODU for relief well drilling within Australia, screening would be extended to MODUs with a valid safety case outside Australia. If an international MODU with an Australian safety case is not identified, an internal review will be undertaken, NOPSEMA notified and the issue tabled at the AEP Drilling Industry Safety Committee. A review of the significance of the change in risk will be undertaken in accordance with Woodside's environment management of change requirements and relevant regulatory triggers. The aforementioned lookahead timeframe would allow two years' warning of any potential gap. Woodside will execute relief well drilling in the fastest possible timeframe.

The detail of these arrangements demonstrates that the risks have been reduced to ALARP and acceptable levels through the control measures and performance standards outlined in Section 5.2.

6.2.2.1 Relief Well drilling timings

The duration of a blowout (from initiation to a successful kill) is assessed as 77 days (MEE-01) for North Rankin Complex Facility Operations PAP. Relief wells for other wells within the field are expected to be similar duration.

Details on the steps and time required to drill a relief well is shown in Table 6-2. A moored MODU has been used as the basis for the time estimate below.

To validate the effectiveness of the relief MODU supply arrangements through the AEP MoU, an exercise to test the 21-day mobilisation period forms part of Woodside's three-yearly Hydrocarbon Spill Arrangements Testing Schedule. Testing of these arrangements are facilitated by an external party and includes suspension of the assisting operator's activities, contracting the MODU, vessel safety case revision and transit to location.

Table 6-2: Relief well drilling timings

Estimated Relief Well Duration	Moored Days	
Rig Mobilisation		
Secure and suspend well. Complete Relief well design. Secure relief well materials.	8.0	21 days
Transit to location based on mobilisation from within the region	2.0	
Backload and loadout bulks and equipment, complete internal assurance of relief well design.	2.0	
Contingency for unforeseen event	9.0	
Mooring activities and relief well construction operations	42	
Intersection and well kill comprising the following stages:		
Drill out shoe, conduct formation integrity test and drill towards intersection point	1.5	14 days
Execute well-specific ranging plan to accurately intersect wellbore in minimum timeframe	9.5	
Pump kill weight drilling fluid per the relief well plan. Confirm well is static with no further flow	0.5	
Contingency for unforeseen technical issues	2.5	
Total Discharge Duration	**77**	

Woodside has considered a broad range of alternate, additional, and improved options as outlined in Section 6.2.3.

Intersect and kill duration is estimated at 14 days. This is a moderately conservative estimate. During the intersect process, the relief well will be incrementally drilled and logged to accurately approach and locate the existing well bore. This will result in the highest probability of intersecting the well on the first attempt and thus will reduce the overall time to kill the well. During the Montara incident, it took five attempts to achieve a successful intersect.

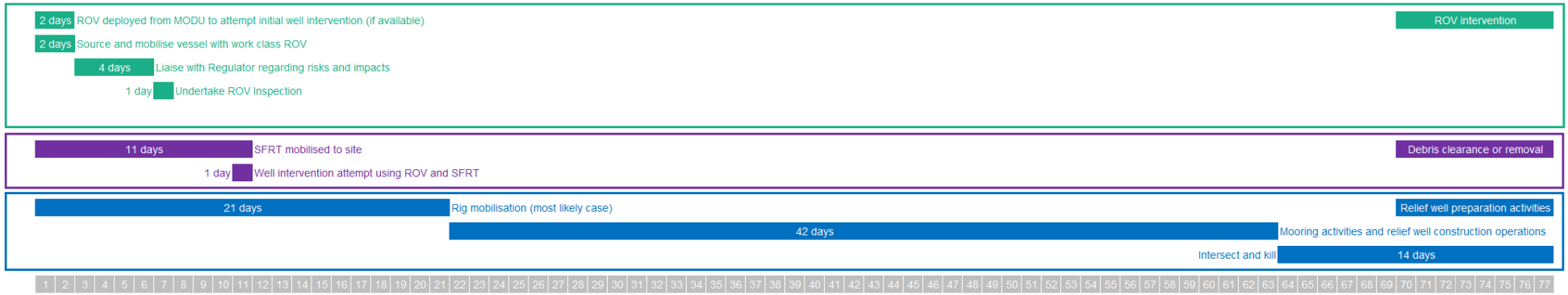

Figure 6-2: Source control and well intervention response strategy deployment timeframes for North Rankin Complex Facility Operations

6.2.2.2 Safety Case considerations

Woodside recognises that it will not be the Operator or holder of the Safety Case for the MODU and/or vessels involved in relief well activities. In the event that a revision to the Operator's Safety Case is required for relief well drilling, Woodside has identified measures to ensure timely response and optimise preparedness as far as practicable that can be undertaken to expedite a straightforward Safety Case revision for a MODU/ vessel to commence drilling a relief well. Performance standards associated with these measures have been included in Section 5.2.

These include;

- Access to Safety and Risk discipline personnel with specialist knowledge.
- Monitoring internal and external MODUs and vessel availability in the region and extended area through contracted arrangements on a monthly basis, with a two-year lookahead.
- Prioritisation of MODUs/vessels with current or historical contracting arrangements. Woodside maintains records of previous contracting arrangements and companies. All current contracts for vessels and MODUs are required to support Woodside in the event of an emergency.
- Leverage mutual aid arrangements such as the AEP MOU for vessel and MODU support.
- Woodside Planning 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 North Rankin Complex Facility Operations Drilling and Subsea Installation, including the associated site-specific well hazards. As such, there is less new detail for the regulator to review and should present a short review timeframe with no impact expected to the commencement of relief well drilling activities.

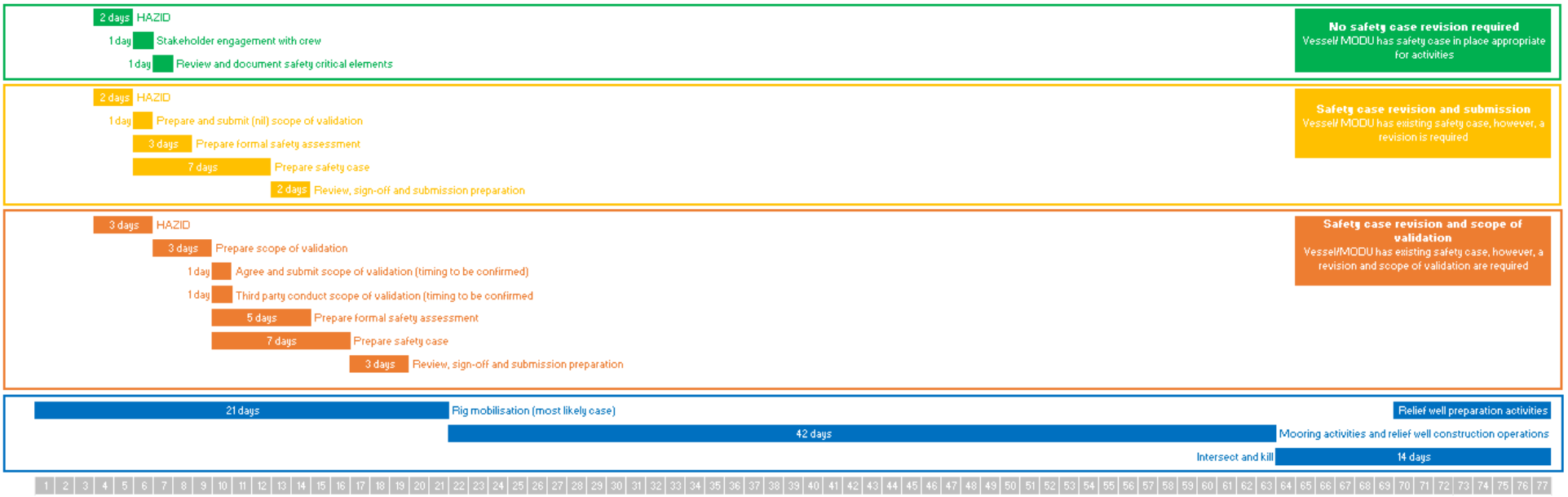

Figure 6-3: Timeline showing safety case revision timings alongside other relief well preparation activity timings for North Rankin Complex Facility Operations well

Table 6-3: Safety case revision conditions and assumptions

Case	No safety case revision required	Safety case revision and submission	Safety case revision and scope of validation
Description	Vessel/MODU has a safety case in place appropriate for activities.	Vessel/MODU has an existing safety case, however, a revision is required.	Vessel/MODU has an existing safety case, however, a revision is required plus scope of validation.
Conditions/ assumptions	Assumes that existing vessel/MODU safety case covers working under the same conditions or the loss of containment is not severe enough to result in any risk on the sea surface.	Safety case timing assumes vessel/MODU selected and crew and available for workshops and safety case studies.	Safety case timing assumes vessel/ MODU selected and crew and available for workshops and safety case studies.
		Assumes nil scope of validation. This assumes that the vessel for source control allows for working in a hydrocarbon environment and control measures are already in place in the existing safety case. For MODU, it assumes that the relief well equipment is already part of the MODU facility and MODU safety case.	Validation will be required for new facilities only. The time needed for the validator to complete the review (from the last document received) and prepare validation statement is undetermined. This is not accounted for here as the safety case submission is not dependent on the validation statement, however the safety case acceptance is.
		Assumes safety case preparation is undertaken 24/7.	Assumes safety case preparation is undertaken 24/7.

6.2.3 Source Control – Control Measure Options Analysis

The assessment described in Section 6.2.1 and 6.2.2 outline the primary and alternate approach respectively that Woodside would implement for relief well drilling**.**

Woodside has outlined the options considered against the activation, mobilisation (improved options), deployment (alternate and additional options) process described in Section 2.1.1 that provides an evaluation of:

- predicted cost associated with adopting the option
- predicted change/environmental benefit
- predicted effectiveness/feasibility of the option

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical.

- Alternative options, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control.
- Additional control measures are evaluated in terms of their ability to reduce an impact or risk when added to the existing suite of control measures.
- Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Options where there is not a clear justification for their inclusion or exclusion may be subject to a detailed assessment.

6.2.4 Activation/Mobilisation – Control Measure Options Analysis

This section details the assessment of alternative, additional or improved control measures that were considered to ensure the selected level of performance in Section 5.2 reduces the risk to ALARP. The Alternative, additional and improved control measures that have been assessed and selected are highlighted in green and the relevant performance of the selected control is cross referenced. Items highlighted in red have been considered and rejected on the basis that they are not feasible or the costs are clearly grossly disproportionate compared to the environmental benefit.

6.2.4.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Standby MODU shared for all Woodside activities	A standby MODU shared across all Woodside activities is likely to provide a moderate environmental benefit as it may reduce the 21-day sourcing, contracting and mobilisation time by up to 10 days (to 11 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities. This may allow the well to be killed up to 10 days sooner (total of 67 days for well kill) and may result in a reduction of up to 2579.6 m^3 of Perseus Condensate for the credible scenario (MEE-01).	This option is not considered feasible for all Woodside activities as there are a large range of well depths, complexities, geologies and geophysical properties across all Woodside's operations. The large geographic area of Woodside activities also means that the MODU is unlikely to be in the correct location at the right time when required.	Even with costs shared across Woodside operations, the costs (approximately A$1.1 B over the five years) of maintaining a shared MODU are considered disproportionate to the environmental benefit potentially achieved by reducing mobilisation times by up to 10 days.	The costs and complexity of having a MODU and maintaining this arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained above finding a MODU through the MOU agreement for all spill scenarios.	**No**
Standby MODU shared across AEP MOU Titleholders	A standby MODU shared across all titleholders who are signatories to the AEP MOU is likely to provide a minor environmental benefit as it may reduce the 21-day sourcing, contracting and mobilisation time by up to seven days (to 14 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities. This may result in a reduction of up to 1805.7 m^3 Perseus Condensate for the credible scenario (MEE-01).	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**

6.2.4.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Implement and maintain minimum standards for Safety Case development	Woodside's contingency planning consideration would be to source a rig from outside Australia with an existing Safety Case. This would require development and approval of a safety case revision for the rig and activities prior to commencing well kill operations.	This option is considered feasible and would require Woodside to develop minimum standards for safe operations for relevant Safety Case input along with maintaining key resources to support review of Safety Cases. Woodside would not be the operator for relief well drilling and would therefore not develop or submit the Safety Case revision. Woodside's role as Titleholder would be to provide minimum standard for safe operations that MODU operators would be required to meet and/or exceed.	Woodside has outlined control measures and performance standards regarding template Safety Case documentation and maintenance of resources and capability for expedited Safety Case review.	This option has been selected based on its feasibility, low cost and the potential environmental benefits it would provide.	**Yes**

6.2.4.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Monitor internal drilling programs for rig availability	Woodside may be conducting other campaigns that overlap with the Petroleum Activities Program, potentially providing availability of a relief well drilling rig within Woodside. The environmental benefit of monitoring other drilling programs internally is for Woodside to understand what other rigs may be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	Woodside monitors vessel and MODU availability through market intelligence services for location. Woodside will continually monitor other drilling and exploration activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	Associated cost of implementation is minimal to the environmental benefit gained. Woodside has outlined control measures and performance standards.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	**Yes**
Monitor external activity for rig availability	The environmental benefit achieved by monitoring drilling programs and rig movements across industry provides the potential for increased availability of suitable rigs for relief well drilling. Additional discussions with other Petroleum Titleholders may be undertaken to potentially gain faster access to a rig and reduce the time taken to kill the well and therefore volume of hydrocarbons released.	Woodside will source a relief well drilling rig in accordance with the AEP MOU on rig sharing in the unlikely event this is required. Commercial and operational provisions do not allow Woodside to discuss current and potential drilling programs in detail with other Petroleum Titleholders.	Associated cost of implementation is moderate to the environmental benefit gained. Woodside will continually engage with other Titleholders and Operators regarding activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	**Yes**
Monitor status of Registered Operators/ Approved Safety cases for rigs	Woodside can monitor the status of Registered Operators for rigs operating within Australia (and therefore safety case status) on a monthly basis. This allows for a prioritised selection of rigs in the event of a response with priority given to those with an existing safety case.	The environmental benefit of monitoring rigs is for Woodside to understand what other rigs may be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	The cost is minimal.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	**Yes**

6.2.5 Deployment Options Analysis

6.2.5.1 Alternative Control Measures

Alternative Control Measures considered
Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.2.5.2 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
Pre-drilling top-holes	This option represents additional environmental impacts associated with discharge of additional drill cuttings and fluids along with benthic habitat disturbance. It is also not expected to result in a significant decrease in relief well timings	This option is not considered feasible due to the uncertainties related to the location and trajectory of the intervention well, which may vary according to the actual conditions at the time the loss of containment event occurs. Additionally, there is only expected to be a minor reduction in timing for this option of 1-2 days based on the drilling schedule. Duration to drill and kill may be reduced by 1-2 days, but top-hole may have to be relocated, due to location being unsafe or unsuitable and further works will be required each year to maintain the top holes.	Utilising an existing MODU and pre-drilling top-hole for relief well commencement would significantly increase costs associated the Petroleum Activities Program. Estimated cost over the program's life is approx. A$1.6 M per day over the PAP based on 2-4 days of top-hole drilling (plus standby time) for each top-hole drilled.	This option would not provide an environmental benefit due to the additional environmental impacts coupled with a lack of improved relief well timings.	**No**
Purchase and maintain mooring system	Purchasing and maintaining a mooring system could provide a moderate environmental benefit as it may reduce equipment sourcing time. However, due to the continued need for specialists to install the equipment plus sourcing a suitable vessel, the timeframe reduction would be minimal.	Woodside is not a specialist in installing and maintaining moorings so would require specialists to come in to install the moorings and would also require specialist vessels to be sourced to undertake the work.	The cost of purchasing, storing and maintaining pre-lay mooring systems with anchors, chains, buoys and ancillary equipment is considered grossly disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit as timeframe reductions would be minimal.	**No**
Contract in place with Wild Well Control and Oceaneering	Woodside has an agreement in place with Wild Well Control Inc and Oceaneering to provide trained personnel in the event of an incident. This will ensure that competent personnel are available in the shortest possible timeframe.	Having contracts in place to access trained, competent personnel in the event of an incident would reduce mobilization times. This option is considered reasonably practicable.	Minimal cost implications – Woodside has standing contract in place to provide assistance across all activities.	This control measure is adopted as the costs and complexity are not considered disproportionate to any environmental benefit that might be realised.	**Yes**

6.2.5.3 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	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Maintaining relief well drilling supplies	There is not predicted to be any reduction in relief well timing or spill duration from Woodside maintaining stocks of drilling supplies (mud, casing, cement, etc.)	It would be feasible to source some relief well drilling supplies such as casing but the actual composition of the cement and mud required will need to be specific to the well. This option is also not deemed necessary as the lead time for sourcing and mobilising these supplies is included in the 21 days for sourcing and mobilising a rig.	The capital cost of Woodside purchasing relevant drilling supplies is expected to be approximately A$600K with additional costs for storage and ongoing costs for replenishment. These costs are considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit.	**No**

6.2.6 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 wild well control and Oceaneering to supply trained, competent personnel
- improved
  - monitor internal drilling programs for MODU availability
  - monitor external activity for MODU availability
  - monitor status of registered operators / approved safety cases for MODUs.

6.3 Source Control via Vessel SOPEP – ALARP Assessment

Alternative, additional and improved options have been assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.3.1 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.3.1.1 Alternative Control Measures

Alternative Control Measures considered
Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.3.1.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical additional control measures identified					

6.3.1.3 Improved Control Measures

Improved Control Measures considered
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical improved control measures identified					

6.3.2 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, 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 which are highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.4.1 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/ restocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.4.2 Response Planning: North Rankin Complex Facility Operations – 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 modelling results provided from specific scenarios. The full list of RPAs predicted to be contacted by oil above response thresholds are detailed in Table 3-1.

Deterministic modelling for the WCCS (MEE-02) indicates that first shoreline accumulation (at a concentration of 100 g/m^2) would occur on day 0.6 (Dampier Archipelago, Keast Island, Legendre Island), with the peak volume accumulations (at a concentration of 100 g/m^2) occurring on day 2 for Dampier Archipelago, Keast Island, Cohen Island, Cape Bruguieres, and Day 3 for Legendre Island.

Deterministic modelling for the WCCS (MEE-01) indicate that first shoreline accumulation (at a concentration of 100 g/m^2) at Day 32.8 (month 2) at Clerke Reef (Rowley Shoals MP) and Bedwell Island, with the peak volume accumulation (at a concentration of 100 g/m^2) occurring at Day 57.3 (month 3) for Exmouth, Ningaloo Coast and Ningaloo MP.

Given the peak shoreline contact at RPAs is not predicted until day 2 at Dampier Archipelago, Keast Island, Cohen Island, Cape Bruguieres, the existing capability is considered sufficient by day 2-3 to mobilise and deploy protection at RPAs prior to hydrocarbon contact, 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 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 meets the response planning need identified for shoreline protection and deflection operations at identified RPAs by day 3.

Table 6-4: Response Planning – Shoreline Protection and Deflection

	North Rankin Complex Loss of Well Containment (MEE-01) and Export Pipeline Loss of Containment (MEE-02)	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Month 2	Month 3
	Oil on shoreline (from deterministic modelling) m^3	29	629	46	0	0	0	0	0	0	0	1	8
A	**Capability Required**												
A1	Number of RPAs contacted (> 100 g/m^2) – MEE-01	0	0	0	0	0	0	0	0	0	0	1	1
A2	Number of RPAs contacted (> 100 g/m^2) – MEE-02	4	6	1	0	0	0	0	0	0	0	0	0
B	**Capability Available (operations per day)**												
B1	SPD operations available – per day (lower)	0	1	1	2	2	4	6	70	70	70	330	330
B2	SPD operations available – per day (upper)	1	2	3	4	6	8	10	84	84	84	336	336
C	**Capability Gap (operations per day)**												
C1	SPD operations gap – per day (lower)	4	5	0	0	0	0	0	0	0	0	0	0
C2	SPD operations gap – per day (upper)	7	10	0	0	0	0	0	0	0	0	0	0

A1 and A2– the number of Response Protection Areas contacted by surface hydrocarbons above 100 g/m^2
B1 and B2 – the upper and lower number of shoreline protection and deflection operations available (based on response planning assumptions in Section 5.4),
C1 and C2 – the gap between the upper and lower number of shoreline protection and deflection operations required in A1, A2 and A3 compared to the operations available in B1 and B2

Table 6-5: Indicative Tactical response plan, aims and methods for identified RPAs

Tactical Response Plan	Response aims and methods
Dampier Archipelago – Inshore Waters of Mermaid Sound/ Dampier Archipelago (applicable to RPAs including; Gidley Island, Keast Island, Cape Bruguieres, Angel Island and Cohen Island)	**First response objective:** Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas. **Second response objective**: Recovery of floating oil at sea where possible through the use of skimming systems and other appropriate recovery devices to reduce shoreline impact. **Third response objective:** Protection of sensitive shorelines within Dampier Archipelago through use of shoreline booms. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/weather conditions. **Fourth response objective**: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate. NOTES: • Relevant permissions must be sought from DBCA to carry out any response operations within the limits of the area. • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside has an MoU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside is a member of both AMOSC and OSRL and has the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7. • This TRP should be considered a draft until it has been verified and tested.
Legendre Island – Dampier	**First Response objective:** Ongoing operational monitoring and evaluation of hydrocarbon spill to adapt aims and response tactics to evolving nature of the incident and to assist in locating relevant booming areas. **Second Response objective:** Protection of sensitive shorelines (mangrove) at Legendres Island through use of shoreline booms. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/ weather conditions **Third Response objective:** Clean-up impacted shoreline. Manual clean-up techniques, use of mechanical recovery methods and techniques where appropriate. **Fourth response aim:** Collection and specialist cleaning/ rehabilitation of oiled wildlife NOTES: • Relevant permissions must be sought from DBCA to carry out any response operations within the limits of the area. • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside has an MoU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside is a member of both AMOSC and OSRL and has the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7. • This TRP should be considered a draft until it has been verified and tested.
Broome - Clerke Reef (Rowley Shoals) including Bedwell Island	**First Response objective:** Ongoing operational monitoring and evaluation of hydrocarbon spill to adapt aims and response tactics to evolving nature of the incident and to assist in locating relevant booming areas.

Tactical Response Plan	Response aims and methods
	Second response objective: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate. **Third response objective:** Recovery of floating oil at sea where possible through the use of offshore booms, skimming systems and other appropriate recovery devices. It is necessary to collect and remove floating oil at sea to reduce / remove oil from nearing the shoreline **Fourth response objective:** Protection of Bedwell Island using shore sealing booms. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/weather conditions. OPERATIONAL NEBA REQUIRED PRIOR TO DEPLOYMENT **Fifth response aim:** • Relevant permissions must be sought from the DBCA (Broome) authorities to carry out any response operations within the limits of the area • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside have an MOU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside are members of both AMOSC and OSRL and have the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7.
Exmouth – Mangrove Bay	**First response objective:** Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas. **Second response objective**: Protection of Mangrove Bay Lagoon. Prevent hydrocarbons ingress to lagoons through use of shore sealing booms. Complete northern lagoon first, then southern if required – depending on beach topography and tidal cycle. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/weather conditions. **Third response objective**: 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. **Fourth response objective**: Recovery of floating oil where possible through the use of skimming systems and other appropriate recovery devices. 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 spreading of oil down a coastline. **Fifth response objective**: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate • Relevant permissions must be sought from the DoT WA and DBCA authorities to carry out any response operations within the limits of the area • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside have an MOU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside are members of both AMOSC and OSRL and have the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7.
Exmouth – Turquoise Bay	**First response objective:** Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas. **Second response objective**: Pre-clean of potential impact areas (if time allows) using rakes and shovels to move any debris above the high tide line and then segregate appropriately.

Tactical Response Plan	Response aims and methods
	Third response objective: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate • Relevant permissions must be sought from the DoT WA and DBCA authorities to carry out any response operations within the limits of the area • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside have an MOU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside are members of both AMOSC and OSRL and have the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7.
Exmouth – Yardie Creek	**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 and to assist in locating relevant booming areas. **Second response aim**: Protection of Yardie Creek entrance through the deployment of protection booming formations. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/weather conditions. **Third response aim:** Pre-clean of potential impact areas (if time allows) using rakes and shovels to move any debris above the high tide line along the beach and then segregate appropriately. **Fourth response aim**: Recovery of floating oil at Yardie Creek entrance where possible through the use of skimming systems and other appropriate recovery devices. **Fifth response aim:** Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate. **Sixth response aim**: Collection and specialist cleaning/rehabilitation of oiled wildlife. • Relevant permissions must be sought from the DoT WA and DBCA authorities to carry out any response operations within the limits of the area • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside have an MOU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside are members of both AMOSC and OSRL and have the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7.
Exmouth – Jurabi to Lighthouse Beaches	**First response objective:** Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas **Second response objective**: Pre-clean of potential impact areas (if time allows) using rakes and shovels to move any debris above the high tide line and then segregate appropriately. **Third response objective**: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate. **NOTE:** There may be limited opportunity to use shore sealing booms and skimmers to enhance natural collection points, but the location and availability of these will depend on the conditions on the day and so is not part of this TRP.

Tactical Response Plan	Response aims and methods
	• Relevant permissions must be sought from the DoT WA and DBCA authorities to carry out any response operations within the limits of the area • In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside have an MOU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside are members of both AMOSC and OSRL and have the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7.
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.

Pre-emptive mobilisation of equipment and personnel would commence as soon as practicable prior to oil contact. Additional resources would be mobilised depending on the scale of the event to increase the length or number of shorelines being protected.

A shoreline protection and deflection response would be launched only when operational monitoring operations identify spill heading towards RPA(s) and there is sufficient time for deployment prior to shoreline contact.

6.4.3 Shoreline Protection and Deflection – Control Measure Options Analysis

6.4.3.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Pre-position equipment at Response Protection Areas (RPAs)	Additional environmental benefit of having equipment prepositioned is considered minor as the RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event making it impractical to preposition equipment in advance. Equipment is currently available to protect RPAs, however, deployment would need to consider levels of volatile hydrocarbons arising from a condensate or MDO spill.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised. Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options. The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost to preposition protection/ deflection packages at each site of potential impact would be approx. A$6100 per package per day.	This option is not adopted as pre-positioning shoreline protection and deflection capability is not considered practicable due to uncertainty of the sites that may be contacted during a real spill event and the predicted time frames prior to contact. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

6.4.3.2 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 to protect additional shorelines	Additional equipment would increase the number of receptor areas that could be protected from hydrocarbon contact. However, current availability of personnel and equipment is capable of protecting up to 30 km of shoreline, commensurate with the scale and progressive nature of shoreline impact. Additional stocks would be made available from international sources if long term up scaling were necessary. A reduction in environmental consequence from a 'B' rating (serious long-term impacts) is unlikely to be realised as a result of having more equipment available locally.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised. Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options. The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost for purchase supplemental protection and deflection equipment would be approximately. A$455,000 per package.	This option is not adopted as additional shoreline protection and deflection capability is not considered practicable in the timeframe prior to contact. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**
Additional trained personnel	The level of training and competency of the response personnel allows the shoreline protection and deflection operation is delivered with minimum secondary impact to the environment. Training additional personnel does not provide an increased environmental benefit.	Additional personnel required to sustain an extended response can be sourced through the Woodside *People & Global Capability Surge Labour Requirement Plan*. Additional personnel sourced from contracted OSRO's (OSRL/AMOSC) to manage other responders. Response personnel are trained and exercised regularly in shoreline response techniques and	Additional Specialist Personnel would cost A$2000 per person per day.	This option is not adopted as the existing capability meets the need. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, mobilising additional	**No**

		methods. All personnel involved in a response will receive a full operational/safety briefing prior to commencing operations.		capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	

6.4.3.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster response/ mobilisation time	Modelling predicts floating or shoreline accumulation at threshold at day 0.6 at Dampier Archipelago, Legendre Island, Keast Island and Cohen Island (MEE-02) with peak volumes arriving on day 2, thus faster response times are not practicable.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection response will be available for mobilisation within 24-48 hrs of activation. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days.	The cost of establishing a local stockpile of new mitigation equipment (including protection and deflection boom) closer to the expected hydrocarbon stranding areas is not commensurate with the need.	This option is not adopted as additional shoreline protection and deflection capability is not considered practicable in the timeframe prior to contact. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

6.4.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

6.5 Shoreline Clean-up – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation which are highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.5.1 Existing Capability – Shoreline Clean-up

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/ vessel/ aircraft/ vehicle location and duties, survey or classification society inspection requirements, overflight/ port/ quarantine permits and inspections, crew/ pilot duty and fatigue hours, refuelling/ restocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.5.2 Response planning: North Rankin Complex Facility Operations – Shoreline Clean-up

Woodside has assessed existing capability against the WCCS (MEE-02) and has identified that the range of techniques provide an ongoing approach to shoreline clean-up at identified RPAs. Woodside's capability can cover required shoreline clean-up operations for the PAP by day 7.

The deterministic modelling indicates that first shoreline contact at Dampier Archipelago, Keast Island, Legendre Island occurs within 0.6 days based on the deterministic run for the minimum time to commencement of oil accumulation at any shoreline receptor (at threshold of 100 g/m^2). Peak shoreline accumulation predicted from the deterministic modelling run for the maximum cumulative oil volume accumulated across all shorelines (at threshold of 100 g/m^2), is 325 m^3 at Dampier Archipelago on day 2 (MEE-02). Peak contact is also predicted to occur on day 2 at Keast Island, Cohen Island and Cape Bruguieres and day 3 for Legendre Island.

Deterministic modelling for MEE-01 indicates that first shoreline accumulation (at a concentration of 100 g/m^2) occurs on day 32.8 (month 2) at Clerke Reef (Rowley Shoals MP) and Bedwell Island, with the peak volume accumulation (at a concentration of 100 g/m^2) occurring on day 57.3 (month 2) at Exmouth, Ningaloo Coast and Ningaloo MP.

The response planning need scenario that provides a worst-case scenario for planning purposes has been outlined below. Given all other shoreline contact scenarios identified from deterministic modelling are longer time frames and lesser volumes (MEE-01) demonstration of capability against this WCCSS will ensure Woodside can meet requirements for any other outcome.

Woodside is satisfied that the current capability is managing risks and impacts to ALARP. The full list of RPAs predicted to be contacted by oil is detailed in **Table 3-1** and relevant Tactical Response Plans available for identified RPAs are included in **Table 6-5**.

Due to the time of contact predicted shoreline clean-up and deterministic modelling predicting ongoing stranding after this peak, this response may not be as time critical compared to other response techniques and the scale will depend on the success of other techniques preventing oiling occurring. Further, the potential scale and remoteness of a response coupled with the uncertainty of which locations will be affected precludes the stockpiling or prepositioning of equipment specific to shorelines. The most significant constraint is accommodation and transport of personnel in Dampier to undertake clean-up operations and to manage wastes generated during the response effort. From previous assessment of facilities in Dampier, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day.

Woodside has identified several options which could be mobilised to achieve defined response objectives. Evaluation considers the benefit in terms of the time to respond, and the scale of response made possible by each option. The evaluation of possible control measures is summarised in Section 6.5.3.

Table 6-6: Response Planning – Shoreline Clean-up

	North Rankin Complex Loss of Well Containment (MEE-01) and Export Pipeline Loss of Containment (MEE-02)	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Month 2	Month 3	Month 4
	Oil on shoreline (from deterministic modelling) m^3													
	Shoreline accumulation (above 100 g/m^2) – m^3	29	629	46	0	0	0	0	0	0	0	1	8	0
	Oil remaining following response operations – m^3	0	15	310	326	278	218	128	0	0	0	0	0	0
A	**Capability Required (number of operations)**													
A1	SCU operations required (lower)	3	1	36	33	28	22	13	0	0	0	1	1	0
A2	SCU operations required (upper)	0	2	51	47	40	31	18	0	0	0	2	2	0
B	**Capability Available (number of operations)**													
B1	SCU operations available – Stage 2 - Manual (lower)	0	1	3	5	8	12	15	105	105	105	560	560	560
B2	SCU operations available – Stage 2 - Manual (upper)	0	2	5	8	10	15	20	140	140	140	560	560	560
C	**Capability Gap**													
C1	SHC operations gap (lower)	3	0	33	28	20	10	0	0	0	0	0	0	0
C2	SHC operations gap (upper)	0	0	46	39	30	16	0	0	0	0	0	0	0

A1 and A2 – the number of Shoreline Clean-up operations required based on the hydrocarbon volumes ashore above 100 g/m^2
B1 and B2 – the upper and lower number of shoreline clean-up operations available (based on response planning assumptions in Section 5.5),
C1 and C2 – the gap between the upper and lower number of shoreline clean-up operations required in A1 and A2 compared to the operations available in B1 and B2

6.5.3 Shoreline Clean-up - Control measure options analysis

6.5.3.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
No reasonably practical alternative control measures identified					

6.5.3.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Additional trained personnel available	The level of training and competency of the response personnel ensures the shoreline clean-up operation is delivered with minimum secondary impact to the environment. Training additional personnel does not provide an increased environmental benefit.	Additional personnel required to sustain an extended response can be sourced through the Woodside *People & Global Capability Surge Labour Requirement Plan*. Additional personnel sourced from contracted OSROs (OSRL/AMOSC) to manage other responders Response personnel are trained and exercised regularly in shoreline response techniques and methods. All personnel involved in a response will receive a full operational/safety brief prior to commencing operations.	Additional Specialist Personnel would cost A$2000 per person per day.	This option is not adopted as presence of larger numbers of additional personnel may be detrimental to sensitive shoreline areas. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**
Additional trained personnel deployed	Maintaining a span of control of 200 competent personnel is deemed manageable and appropriate for this activity. Additional personnel conducting clean-up activities may increase impacts on the shoreline clean-up through the presence of unnecessary personnel and equipment. Managing a smaller, targeted response is expected to achieve an environmental benefit through ensuring the shoreline clean-up response is suitable and scalable for the shoreline substrate and sensitivity type.	The figure of 200 personnel is broken down to include on 1-2 x Trained Supervisors managing 8-10 personnel/labour hire responders. This allows for multiple operational teams to operate along the extended shoreline at different locations. Typically, an additional 30-50% of the tactical workforce is required to support ongoing operations including On-Scene control, logistics, safety/medical/welfare and transport. Personnel on site will include members with the appropriate specialties to ensure an efficient shoreline clean-up. Additional personnel are available through existing contracts with oil spill response organisations, labour hire organisations and environmental panel contractors	Additional Specialist Personnel would cost A$2000 per person per day.	This option is not adopted as presence of larger numbers of additional personnel may be detrimental to sensitive shoreline areas. Safety factors have also been considered, including the potential for personnel to be exposed to volatile hydrocarbons in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, mobilising additional capability is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	**No**

6.5.3.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster response/ mobilisation time	Modelling predicts floating or shoreline accumulation at threshold at day 0.6 at Dampier Archipelago, Legendre Island, Keast Island and Cohen Island (MEE-02), thus faster response times are not practicable.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection	The cost of establishing a local stockpile of new shoreline clean-up equipment closer to the expected hydrocarbon stranding areas is not commensurate with the need.	This option is not adopted as additional shoreline clean-up capability is not considered practicable in the time frames prior to contact. Safety factors have also been considered, including the potential for personnel to be exposed to	**No**

		response will be available for mobilisation within 24-48 hrs of activation. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days.		hydrocarbon gas vapours in the early stage of the response. Given the rapid natural weathering rate of condensate and MDO, faster mobilisation is not expected to provide a material net environmental benefit, therefore the current capability is considered to reduce the risk to ALARP.	

6.5.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

6.6 Oiled Wildlife Response – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation which are highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.6.1 Existing Capability – 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/ restocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.6.2 Oiled Wildlife Response - Control Measure Options Analysis

6.6.2.1 Alternative Control Measures

Alternative Control Measures considered
Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Direct contracts with service providers	This option duplicates the capability accessed through AMOSC and OSRL and would compete for the same resources. Does not provide a significant increase in environmental benefit.	These delivery options provide increased effectiveness through more direct communication and control of specialists. However, no significant net benefit is anticipated.	Duplication of capability – already subscribed to through contracts with AMOSC and OSRL	This option is not adopted as the existing capability meets the need.	**No**

6.6.2.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional wildlife treatment systems	The selected delivery options provide access to call-off contracts with selected specialist providers. The agreements ensure that these resources can be mobilised to meet the required response objectives, commensurate with the progressive nature of environmental impact and the time available to monitor hydrocarbon plume trajectories. Provides response equipment and personnel by day 3. The additional cost in having a dedicated oiled wildlife response (equipment and personnel) in place is disproportionate to environmental benefit. These selected delivery options provide capacity to carry out an oiled wildlife response if contact is predicted; and to scale up the response if required to treat widespread contamination. Current capability meets the needs required and there is no additional environmental benefit in adopting the improvements.	Although hydrocarbon contact above wildlife response threshold concentrations (>10 g/m^2) with offshore waters is expected from day one (MEE-01), given the low likelihood of such an event occurring and that the current capability meets the need by day 3, the cost of implementing measures to reduce the mobilisation time is considered disproportionate to the benefit. Oiled wildlife response capacity would be addressed for open Commonwealth waters through the AMOSC arrangements, as informed by operational monitoring, and under the direction of DBCA in nearshore areas. The cost and organisational complexity of this approach is moderate, and the overall delivery effectiveness is high.	Additional wildlife response resources could total A$1700 per operational site per day.	This option is not adopted as the existing capability meets the need by day 3.	**No**
Additional trained wildlife responders	Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. The potential environmental benefit of training additional personnel is expected to be low.	Current numbers meet the needs required by day 3 and additional personnel are available through existing contracts with oil spill response organisations and environmental panel contractors. Additional equipment and facilities would be required to support ongoing response, depending on the scale of the event and the impact to wildlife and maybe sourced via existing contracts with OSROs. Materials for holding facilities, portable pools, enclosures and rehabilitation areas would be sourced as required.	Additional wildlife response personnel cost A$2000 per person per day	This option is not adopted as the existing capability meets the need by day 3.	**No**

6.6.2.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster mobilisation time for wildlife response	This control measure provides increased effectiveness through faster mobilisation of specialists. Some net environmental benefit may be expected if teams could be mobilised by day 1, however, the volatile nature of a spill of condensate or MDO may preclude access on day 1 for response personnel.	Pre-positioning vessels or equipment would reduce mobilisation time for oiled wildlife response activities. However, RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event.	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 by day 3.	**No**

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 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 which are highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.7.1 Existing Capability – 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/ restocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.7.2 Waste Management - Control Measure Options Analysis

6.7.2.1 Alternative Control Measures

Alternative Control Measures considered
Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.7.2.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Increased waste storage capability	The procurement of waste storage equipment options on the day of the event will allow immediate response and storage of collected waste. The environmental benefit of immediate waste storage is to reduce ecological consequence by safely securing waste, allowing continuous response operations to occur.	Access to Woodside's waste service provider's storage options provides the resources required to store and transport sufficient waste to meet the need. Access to waste contractors existing facilities enables waste to be stockpiled and gradually processed within the regional waste handling facilities. Additional temporary storage equipment is available through existing contract and arrangements with AMOSC/ OSRL. Existing arrangements meet identified need for the PAP.	Cost for increased waste disposal capability would be approx. A$1300 per m^3. Cost for increased onshore temporary waste storage capability would be approx. A$40 per unit per day.	This option is not adopted as the existing capability meets the need.	**No**

6.7.2.3 Improved Control Measures

Improved Control Measures considered
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster response time	The access to Woodside's waste service provider's waste storage options provides the resources to store and transport waste, permitting the wastes to be stockpiled and gradually processed within the regional waste handling facilities. Bulk transport to the waste service provider's licensed waste management facilities would be undertaken via controlled-waste-licensed vehicles and in accordance with Environmental Protection (Controlled Waste) Regulations 2004. The environmental benefit from successful waste storage will reduce pressure on the treatment and disposal facilities reducing ecological consequences by safely securing waste. In addition, waste storage	Woodside already maintains an equipment stockpile in Exmouth to enable shorter response times to incidents. This stockpile includes temporary waste storage equipment. Woodside has access to stockpiles of waste storage and equipment in Dampier and Exmouth through existing contracts and arrangements.	The incremental benefit of having a dedicated local Woodside owned stockpile of waste equipment and transport is considered minor and cost is considered disproportionate to the benefit gained given predicted shoreline contact times.	This option is not adopted as the existing capability meets the need.	**No**

	and transport will allow continuous response operations to occur. This delivery option would increase known available storage, eliminating the risk of additional resources not being available at the time of the event. However, the environmental benefit of Woodside procuring additional waste storage is considered minor as the risk of additional storage not being available at the time of the event is considered low and existing arrangements provide adequate storage to support the response.				

6.7.3 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP:

- alternative
  - none selected
- additional
  - none selected
- improved
  - none selected.

6.8 Operational and Scientific Monitoring – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation which are highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.8.1 Existing Capability – Operational and Scientific Monitoring

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/ vessel/ aircraft/ vehicle location and duties, survey or classification society inspection requirements, overflight/ port/ quarantine permits and inspections, crew/ pilot duty and fatigue hours, refuelling/ re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.8.2 Operational and Scientific Monitoring – Control Measure Options Analysis

6.8.2.1 Alternative Control Measures

Alternative Control Measures considered
Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Analytical laboratory facilities closer to the likely spill affected area	The environmental consideration of having access to suitable laboratory facilities in Karratha to carry out the hydrocarbon analysis would provide faster turnaround in reporting of results only by a matter of days (as per the time to transport samples to laboratories).	SM1ater quality monitoring requires water samples to be transported to National Association of Testing Authorities (NATA) rated laboratories in Perth or over to the East coast. Consider the benefit of laboratory access and transportation times to deliver water samples and complete lab analysis. There is a time lag from collection of water samples to being in receipt of results and confirming hydrocarbon contact to sensitive receptors).	Laboratory facilities and staff available at locations closer to the spill affected area can reduce reporting times only to a moderate degree (days) with associated high costs of maintaining capability do not improve the environmental benefit.	This control measure is not adopted as the costs and complexity are considered disproportionate to any environmental benefit that might be realised.	**No**
Dedicated contracted OSM vessel (exclusive to Woodside)	Would provide faster mobilisation time of operational and scientific monitoring resources, however, the environmental benefit associated with faster mobilisation time would be minor compared to selected options.	Chartering and equipping additional vessels on standby for operational and scientific monitoring has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when compared with the anticipated availability of vessels and resources within in the required timeframes. The selected delivery provides capability to meet the scientific monitoring objectives, including collection of First-Strike Monitoring Priority data where baseline knowledge gaps are identified for receptor locations where spill predictions of time to contact are >7 days.	The cost and organisational complexity of employing a dedicated response vessel is considered disproportionate to the potential environmental benefit by adopting these delivery options.	This control measure is not adopted as the costs and complexity are considered disproportionate to any environmental benefit that might be realised.	**No**
Use of Autonomous Underwater Vehicles (AUVs) for hydrocarbon presence and detection.	Use of AUVs may be feasible and may provide an environmental benefit in assessing inaccessible areas for presence of hydrocarbons in the water however cost of purchase is disproportionate to the environmental benefit when compared to the monitoring types in place.	AUVs may be considered as an additional method of monitoring, should remote systems be required for health and safety reasons.	Cost A$10,000 for mobilisation and A$15,000 a day when deployed.	This control measure is not adopted as the costs and complexity are considered disproportionate to the environmental benefit that might be realised.	**No**

6.8.2.2 Additional control measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
The need for resourcing to acquire adequate baseline in the event of a spill	Adequate baseline to quantify environmental impact of a spill event.	As part of Woodside's OSRL OSM Supplementary Service Agreement, and consistent with the Joint Industry OSM Framework, the OSM Service Provider will provide key OSM personnel and specialised field monitoring equipment in order to address First-strike monitoring priorities and reactive baseline.	No additional cost associated with baseline acquisition under the OSRL OSM Supplementary Service Agreement.	This control measure is not adopted as the current capability meets the need.	**No**

6.8.2.3 Improved Control Measures considered

Improved Control Measures considered *Improved control measures, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster mobilisation time (for water quality monitoring).	Due to the restriction on accessing the spill location on Day one there is no environmental benefit in having vessels available from day one. The cost of having dedicated equipment and personnel is disproportionate to the environmental benefit. The availability of vessels and personnel meets the response need. Shortening the timeframes for vessel availability would require dedicated response vessels on standby in KBSF or Exmouth.	Operations are not feasible on day 1 as the hydrocarbon will take time to surface, and the volatile nature of the oil may lead to unsafe conditions in the vicinity of fresh hydrocarbon.	The cost and organisational complexity of employing two dedicated response vessels (approximately A$15M/year per vessel) is considered disproportionate to the potential environmental benefit to be realised by adopting this delivery options. Cost for purchase of equipment approx. A$200,000. Ongoing costs per annum for cost of hire and pre-positioning for life of asset/activity would be larger than the purchase cost. Dedicated equipment and personnel, living locally and on short notice to mobilise. The cost would be approx. A$1M per annum, which is disproportionate to the incremental benefit this would provide, assets are already available on day 1. 2 integrated fleet vessels are available from day 1, however these could be tasked with other operations.	This option is not adopted as the area could not be accessed earlier due to safety considerations. Additionally, the cost and complexity of implementation outweighs the benefits.	**No**

6.8.3 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP:

- alternative
  - none selected
- additional
- improved
  - none selected.

6.8.4 ALARP and Acceptability Summary

ALARP and Acceptability Summary		
Scientific Monitoring		
ALARP Summary	X	Known, reasonably practicable control measures have been adopted
	X	No additional, alternative and improved control measures would provide further benefit
	X	No reasonably practical additional, alternative, and/or improved control measure exists
	The resulting operational and scientific monitoring capability has been assessed against the credible spill scenarios. The range of techniques provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. Known, reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be Moderate and the overall delivery effectiveness considered Medium. The operational and scientific monitoring's main objectives can be met, with the addition of one alternative control measures to provide further benefit.	
Acceptability Summary	• The control measures selected for implementation manage the potential impacts and risks to ALARP. • In the event of a hydrocarbon spill for the PAP, the control measures selected, meet or exceed the requirements of Woodside Management System and industry best-practice. • Operational and scientific monitoring control and activities are compliant with relevant environmental legislation and regulations, including the EPBC Act. • Throughout the PAP, relevant Australian standards and codes of practice will be followed to evaluate the impacts from a loss of well control. • Stakeholder consultation undertaken for the PAP did not receive feedback regarding concerns for Scientific Monitoring activities in response to a hydrocarbon spill. • The level of impact and risk to the environment has been considered with regards to the principles of ESD; and risks and impacts from a range of identified scenarios were assessed in detail. The control measures described consider the conservation of biological and ecological diversity, through both the selection of control measures and the management of their performance. The control measures have been developed to account for credible case scenarios, and uncertainty has not been used as a reason for postponing control measures.	
On the basis from the ALARP and acceptability summary as presented above and in Section 6.7 of the EP Woodside considers the adopted controls discussed manage the impacts and risks associated with implementing operational and scientific monitoring activities to a level that is ALARP and acceptable.		

7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage these further impacts and risks to ALARP and acceptable levels. A simplified assessment process has been used to complete this task which covers the identification, analysis, evaluation and treatment of impacts and risks introduced by responding to the event.

7.1 Identification of impacts and risks from implementing response techniques

Each of the control measures can modify the impacts and risks identified in the EP. These impacts and risks have been previously assessed within the scope of the EP. Refer to the EP for details regarding how these risks are being managed. They are not discussed further in this document.

- Atmospheric emissions
- Routine and non-routine discharges
- Physical presence, proximity to other vessels (shipping and fisheries)
- Routine acoustic emissions vessels
- Lighting for night work/navigational safety
- Invasive marine species
- Collision with marine fauna
- Disturbance to Seabed

Additional impacts and risks associated with the control measures not included within the scope of the EP include:

- Drill cuttings and drilling fluids environmental impact assessment for relief well drilling
- Vessel operations and anchoring
- Presence of personnel on the shoreline
- Human presence (manual cleaning)
- Vegetation cutting
- Additional stress or injury caused to wildlife
- Secondary contamination from the management of waste

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil and Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/ Habitat	Species	Socio-Economic
Operational monitoring	✓		✓	✓		✓	
Source control		✓	✓	✓	✓		
Shoreline protection and deflection	✓	✓			✓	✓	✓
Shoreline clean-up	✓	✓			✓	✓	✓
Oiled wildlife				✓	✓	✓	
Operational and scientific monitoring	✓	✓	✓	✓			
Waste management	✓	✓	✓				✓

7.3 Evaluation of impacts and risks from implementing response techniques

Drill cuttings and drilling fluids environmental impact assessment for relief well drilling

The identified potential impacts associated with the discharge of drill cuttings and fluids during a relief well drilling activity include a localised reduction in water and seabed sediment quality, and potential localised changes to benthic biota (habitats and communities).

A number of direct and indirect ecological impact pathways are identified for drill cuttings and drilling fluids as follows:

- Temporary increase in total suspended solids (TSS) in the water column;
- Attenuation of light penetration as an indirect consequence of the elevation of TSS and the rate of sedimentation;
- Sediment deposition to the seabed leading to the alteration of the physio-chemical composition of sediments, and burial and potential smothering effects to sessile benthic biota; and
- Potential contamination and toxicity effects to benthic and in-water biota from drilling fluids.

Potential impacts from the discharge of cuttings range from the complete burial of benthic biota in the immediate vicinity of the well site due to sediment deposition, smothering effects from raised sedimentation concentrations as a result of elevated Total Suspended Solids (TSS), changes to the physico-chemical properties of the seabed sediments (particle size distribution and potential for reduction in oxygen levels within the surface sediments due to organic matter degradation by aerobic bacteria) and subsequent changes to the composition of infauna communities to minor sediment loading above background and no associated ecological effects. Predicted impacts are generally confined to within a few hundred metres of the discharge point (International Association of Oil and Gas Producers 2016) (within the EMBA for a hydrocarbon spill event).

The discharge of drill cuttings and unrecoverable fluids from relief well drilling is expected to increase turbidity and TSS levels in the water column, leading to an increased sedimentation rate above ambient levels associated with the settlement of suspended sediment particles near to the seabed or below sea surface, depending on location of discharge. Cuttings with retained (unrecoverable) drilling fluids are discharged below the water line at the MODU location, resulting in drill cuttings and drilling fluids rapidly diluting, as they disperse and settle through the water column. The dispersion and fate of the cuttings is determined by particle size and density of the retained (unrecoverable) drilling fluids, therefore, the sediment particles will primarily settle in proximity to the well locations with potential for localised spread downstream (depending on the speed of currents throughout the water column and seabed) (IOGP 2016). The finer particles will remain in suspension and will be transported further before settling on the seabed.

These conclusions were supported by discharge modelling which was undertaken by Woodside in support of the Greater Enfield Development EP Modelling results indicating that the TSS plume of suspended cuttings will typically disperse to the south-west while oscillating with the tide and diminish rapidly with increasing distance from the well locations. Maximum TSS concentrations predicted for 100 m; 250 m and 1 km distances from the wellsite were 7, 5 and 1 mg/L, respectively. Furthermore, water column concentrations below 10 mg/L remain within 235 m of the discharge location for each modelled well. For all well discharge locations (outside of direct discharge sites), TSS concentration did not exceed 10 mg/l. Nelson et al. (2016) identified <10 mg/L as a no effect or sub-lethal minimal effect concentration.

The low sensitivity of the deep-water benthic communities/habitats within and in the vicinity of relief well locations, combined with the relatively low toxicity of water based muds (WBM and non-water based muds (NWBMs, no bulk discharges of NWBM and the highly localised nature and scale of predicted physical impacts to seabed biota indicate that any localised impact would likely be of a slight magnitude (especially when considering the broader consequence of the loss of well containment (LOC) event a relief well drilling activity would be responding too).

Presence of personnel on the shoreline

Presence of personnel on the shoreline during shoreline operations could potentially result in disturbance to wildlife and habitats. During the implementation of response techniques, it is possible that personnel may have minimal, localised impacts on habitats, wildlife and coastlines. The impacts associated with human presence on shorelines during shoreline surveys may include:

- Damage to vegetation/habitat to gain access to areas of shoreline oiling;
- Damage or disturbance to wildlife during shoreline surveys;
- Removal of surface layers of intertidal sediments (potential habitat depletion); and
- Excessive removal of substrate causing erosion and instability of localised areas of the shoreline.

Human presence

Human presence for manual clean-up operations may lead to the compaction of sediments and damage to the existing environment especially in sensitive locations such as mangroves and turtle nesting beaches. However, any impacts are expected to be localised with full recovery expected.

Waste generation

Implementing the selected response techniques will result in the generation of the following waste streams that will require management and disposal:

- Liquids (recovered oil/water mixture), recovered from shoreline clean-up and oiled wildlife response operations
- Semi-solids/solids (oily solids), collected during shoreline clean-up and oiled wildlife response operations
- Debris (e.g. seaweed, sand, woods, plastics), collected during shoreline clean-up and oiled wildlife response operations.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination similar to that described above, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

Cutting back vegetation could allow additional oil to penetrate the substrate and may also lead to localised habitat loss. However, any loss is expected to be localised in nature and lead to an overall net environmental benefit associated with the response by reducing exposure of wildlife to oiling.

Additional stress or injury caused to wildlife

Additional stress or injury to wildlife could be caused through the following phases of a response:

- Capturing wildlife
- Transporting wildlife
- Stabilisation of wildlife
- Cleaning and rinsing of oiled wildlife
- Rehabilitation (e.g. diet, cage size, housing density)
- Release of treated wildlife

Inefficient capture techniques have the potential to cause undue stress, exhaustion or injury to wildlife, additionally pre-emptive capture could cause undue stress and impacts to wildlife when there are uncertainties in the forecast trajectory of the spill. During the transportation and stabilisation phases there is the potential for additional thermoregulation stress on captured wildlife. Additionally, during the cleaning process, it is important personnel undertaking the tasks are familiar with the relevant techniques to ensure that further injury and the removal of water proofing feathers are managed and mitigated. Finally, during the release phase it's important that wildlife are 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 13.1, PS 16.1)
- Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines (PS 13.2, PS 16.2)

Presence of personnel on the shoreline

- Oversight by trained personnel who are aware of the risks (PS 16.6)
- Trained unit leaders will brief personnel prior to operations of the environmental risks of presence of personnel on the shoreline (PS 16.7)

Human Presence

- Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations (PS 6.3, PS 16.5)
- Vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves. (PS 16.3)

Waste generation

- Teams will segregate liquid and solid wastes at the earliest opportunity (PS 22.1)
- All shoreline clean-up sites will be zoned and marked before clean-up operations commence to prevent secondary contamination and minimise the mixing of clean and oiled sediment and shoreline substrates (PS 14.4).
- Removal of vegetation will be limited to moderately or heavily oiled vegetation (PS 16.4)

Additional stress or injury caused to wildlife

- Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA, and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan (PS 20.1)

8 ALARP CONCLUSION

An analysis of alternative, additional and improved control measures has been undertaken to determine their reasonableness and practicability. The tables in Section 6 document the considerations made in this evaluation. Where the costs of an alternative, additional, or improved control measure have been determined to be clearly disproportionate to the environmental benefit gained from its adoption it has been rejected. Where this is not considered to be the case the control measure has been adopted.

The risks from a hydrocarbon spill have been reduced to ALARP because:

- Woodside has a significant hydrocarbon spill response capability to respond to the WCCS through the control measures identified.
- New and modified impacts and risks associated with implementing response techniques have been considered and will not increase the risks associated with the activity.
- A consideration of alternative, additional, and improved control measures identified any other control measures that delivered proportionate environmental benefit compared to the cost of adoption for this activity ensuring that:
    - Known, reasonably practicable control measures have been adopted.
    - No additional, reasonably practicable alternative and/or improved control measures would provide further environmental benefit.
    - No reasonably practical additional, alternative, and/or improved control measure exists.
- A structured process for considering alternative, additional, and improved control measures was completed for each control measure.
- The evaluation was undertaken based on the outputs of the WCCS so that the capability in place is sufficient for all other scenario from this activity.
- The likelihood of the WCCS spill has been ignored in evaluating what was reasonably practicable.

9 ACCEPTABILITY CONCLUSION

Following the ALARP evaluation process, Woodside deems the hydrocarbon spill risks and impacts have been reduced to an acceptable level by meeting all of the following criteria:

- Techniques are consistent with Woodside's processes and relevant internal requirements including policies, culture, processes, standards, structures and systems.
- Levels of risk/ impact are deemed acceptable by relevant persons/ organisations are aligned with the uniqueness of, and/or the level of protection assigned to the environment, its sensitivity to pressures introduced by the activity, and the proximity of activities to sensitive receptors, and have been aligned with Part 3 of the EPBC Act.
- Selected control measures meet requirements of legislation and conventions to which Australia is a signatory (e.g. MARPOL, the World Heritage Convention, the Ramsar Convention, and the Biodiversity Convention etc.). In addition to these, other non-legislative requirements met include:
    - Australian IUCN reserve management principles for Commonwealth marine protected areas and bioregional marine plans.
    - National Water Quality Management Strategy and supporting guidelines for marine water quality.
    - Conditions of approval set under other legislation.
    - National and international requirements for managing pollution from ships.
    - National biosecurity requirements.
- Industry standards, best practices and widely adopted standards and other published materials have been used and referenced when defining acceptable levels. Where these are inconsistent with mandatory/ legislative regulations, explanation has been provided for the proposed deviation. Any deviation produces the same or a better level of environmental performance (or outcome).

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11 GLOSSARY AND ABBREVIATIONS

11.1 Glossary

Term	Description / Definition
ALARP	Demonstration through reasoned and supported arguments that there are no other practicable options that could reasonably be adopted to reduce risks further.
Availability	The availability of a control measure is the percentage of time that it is capable of performing its function (operating time plus standby time) divided by the total period (whether in service or not). In other words, it is the probability that the control has not failed or is undergoing a maintenance or repair function when it needs to be used.
Control	The means by which risk from events is eliminated or minimised.
Control effectiveness	A measure of how well the control measures perform their required function.
Control measure (risk control measure)	The features that eliminate, prevent, reduce or mitigate the risk to environment associated with PAP.
Credible spill scenario	A spill considered by Woodside as representative of maximum volume and characteristics of a spill that could occur as part of the PAP.
Dependency	The degree of reliance on other systems in order for the control measure to be able to perform its intended function.
Environment that may be affected	The summary of quantitative modelling where the marine environment could be exposed to hydrocarbons levels exceeding hydrocarbon threshold concentrations.
Incident	An event where a release of energy resulted in or had (with) the potential to cause injury, ill health, damage to the environment, damage to equipment or assets or company reputation.
Major Environment Event	The events with potential environment, reputation, social or cultural consequences of category C or higher (as per Woodside's operational risk matrix) which are evaluated against credible worst-case scenarios which may occur when all controls are absent or have failed.
Performance outcome	A statement of the overall goal or outcome to be achieved by a control measure
Performance standard	The parameters against which [risk] controls are assessed to ensure they reduce risk to ALARP. A statement of the key requirements (indicators) that the control measure has to achieve in order to perform as intended in relation to its functionality, availability, reliability, survivability and dependencies.
Preparedness	Measures taken before an incident in order to improve the effectiveness of a response
Reasonably practicable	... a computation ... made by the owner, in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) [showing whether or not] that there is a gross disproportion between them ... made by the owner at a point of time anterior to the accident. (Judgement: Edwards v National Coal Board [1949])
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected area (WHA, Commonwealth or State marine reserve or park) containing one or more receptor type.
Receptor Sensitivities	This is a classification scheme to categorise receptor sensitivity to an oil spill. The Environmental Sensitivity Index (ESI) is a numerical classification of the relative sensitivity of a particular environment (particularly different shoreline types) to an oil spill. Refer to the Woodside Oil Pollution Emergency Arrangements (Australia) for more details.
Regulator	NOPSEMA are the Environment Regulator under the Environment Regulations.

Term	Description / Definition
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
BACI	Before/ After Control Impact
BAOAC	Bonn Agreement Oil Appearance Code
BOP	Blowout Preventer
cST	Centistokes
CIMT	Corporate Incident Management Team
COP	Common Operating Picture
cST	Centistokes
DM	Duty Manager
DoT	Western Australia Department of Transport
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions (former Western Australian Department of Parks and Wildlife)
EMBA	Environment that May Be Affected
EMSA	European Maritime Safety Agency
EP	Environment Plan
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
ESI	Environmental Sensitivity Index
ESD	Emergency Shut Down
ESP	Environmental Services Panel
FPSO	Floating Production Storage Offloading
FSP	First Strike Plan
GIS	Geographic Information System
GPS	Global Positioning System
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan
IC	Incident Commander
ICE	Internal Control Environment
IMSA	Index of Marine Surveys for Assessment
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environment Conservation Association
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature

Abbreviation	Meaning
KBSF	King Bay Supply Facility
KIMC	Karratha Incident Management Centre
KSAT	Kongsberg Satellite
LOWC	Loss of Well Containment
MODU	Mobile Offshore Drilling Unit
MoU	Memorandum of Understanding
NEBA	Net Environmental Benefit Analysis
NOAA	National Oceanic and Atmospheric Administration
NRT	National Response Team
OILMAP	Oil Spill Model and Response System
OMP	Operational Monitoring Program
OPEA	Oil Pollution Emergency Arrangements
OPEP	Oil Pollution Emergency Plan
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act
OSM	Operational and Scientific Monitoring
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
OWRP	Oiled Wildlife Response Plan
PAP	Petroleum Activities Program
PEARLS	People, Environment, Asset, Reputation, Livelihood and Services
PBA	Pre-emptive Baseline Areas
PPA	Priority Protection Area
PPB	Parts per billion
PPM	Parts per million
ROV	Remotely Operated Vehicle(s)
RPA	Response Protection Area
SCAT	Shoreline Contamination Assessment Techniques
S&EM	Security and Emergency Management
SIMA	Spill Impact Mitigation and Assessment
SIMAP	Integrated Oil Spill Impact Model System
SSDI	Subsea Dispersant Injection
SFRT	Subsea First Response Toolkit
SMP	Scientific monitoring program
SOP	Standard Operating Procedure
TRP	Tactical Response Plan
UAS	Unmanned Aerial Systems
UAV	Unmanned Aerial Vehicles
VOC	Volatile Organic Compound
WHA	World Heritage Area

Abbreviation	Meaning
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 MEE-01 and MEE-02. The complete list of potential receptor locations within the EMBA within the PAP is included in Section 6 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)

The detailed NEBA assessment outcomes are shown below. The North Rankin Complex Facility Operations preoperational NEBAs contains the full assessments of loss of containment from a blowout of PEN05 well (MEE-01) and subsea equipment loss of containment of GWA Export Condensate (MEE-02)

Table A-1: NEBA assessment technique recommendations for Perseus Condensate due to a well loss of containment from PEN05 well (MEE-01)

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	Well control and intervention
Derby - West Kimberley Coastline	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Exmouth Coastline	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Karratha Coastline	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Northern Pilbara - Islands and Shoreline Coastline	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Bedwell Island	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Cunningham Island	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Clerke Reef (Rowley Shoals MP)	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Imperieuse Reef (Rowley Shoals MP)	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Ningaloo Coast WH	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Ningaloo MP (State)	Yes	No	Not Applicable	No	Yes	Yes	Potentially	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	Well control and intervention
Is this response Practicable?	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	Not Applicable	No	Yes	Yes	Potentially	No	Yes	No	No	Yes

Table A-2: NEBA assessment technique recommendations for subsea equipment loss of containment of GWA Export Condensate (MEE-02)

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	Well control and intervention
Dampier Archipelago Islands/ reserves/ reefs	Yes	No	No	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Lowendal, Hermite, Montebello Islands/ reserves/ reefs	Yes	No	No	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
Northern Pilbara - Shoreline	Yes	No	No	No	Yes	Yes	Potentially	No	Yes	No	No	Yes

* Entrained contact only at this RPA

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	Well control and intervention
Is this response Practicable?	Yes	No	No	No	Yes	Yes	Potentially	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	No	No	Yes	Yes	Potentially	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[12]	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))

.

[12] 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 – Predictive Modelling of Hydrocarbons to Assess Resources at Risk	Predictive modelling focuses on the conditions that have prevailed since a spill commenced, as well as those that are forecasted in the short term (1–3 days ahead) and longer term. Predictive modelling utilises computer-based forecasting methods to predict hydrocarbon spill movement and guide the management and execution of spill response operations to maximise the protection of environmental resources at risk. The objectives of predictive modelling are to: • Provide forecasting of the movement and weathering of spilled hydrocarbons • Identify resources that are potentially at risk of contamination • Provide simulations showing the outcome of alternative response options (booming patterns etc.) to inform on-going Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP	Predictive modelling will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of predictive modelling are: • The hydrocarbon discharge has ceased and no further surface oil is visible • Response activities have ceased • Hydrocarbon spill modelling (as verified by surveillance observations) predicts no additional natural resources will be impacted

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan – Surveillance and reconnaissance to detect hydrocarbons and resources at risk	Surveillance and reconnaissance aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill. The objectives of surveillance and reconnaissance are: • Verify spill modelling results and recalibrate spill trajectory models . • Understand the behaviour, weathering and fate of surface hydrocarbons. • Identify environmental receptors and locations at risk or contaminated by hydrocarbons. • Inform ongoing Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP. • To aid in the subsequent assessment of the short- to long-term impacts and/or recovery of natural resources (assessed in SMPs) by ensuring that the visible cause and effect relationships between the hydrocarbon spill and its impacts to natural resources have been observed and recorded during the operational phase.	Surveillance and reconnaissance will be triggered immediately following a level 2/3 hydrocarbon spill.	The termination triggers for the Surveillance and reconnaissance are: • 72 hours has elapsed since the last confirmed observation of surface hydrocarbons. • Latest hydrocarbon spill modelling results do not predict surface exposures at visible levels.
Operational Monitoring Operational Plan – Pre-emptive assessment of sensitive receptors at risk	Pre-emptive shorelines assessment aims to undertake a rapid assessment of the presence, extent and current status of shoreline sensitive receptors prior to contact from the hydrocarbon spill, by providing categorical or semi-quantitative information on the characteristics of resources at risk. The primary objective of pre-emptive shorelines assessment is to confirm understanding of the status and characteristics of environmental resources, predicted by predictive modelling and surveillance, to be at risk, to further assist in making decisions on the selection of appropriate response actions and prioritisation of resources. Indirectly, qualitative/semi-quantitative pre-contact information collected by pre-emptive shorelines assessment on the status of environmental resources may also aid in the verification of environmental baseline data and provide context for the assessment of environmental impacts, as determined through subsequent SMPs. Pre-emptive shorelines assessment would be undertaken in liaison with WA DoT as the control agency once the oil is in State Waters (if a Level 2/3 incident).	Triggers for commencing pre-emptive shorelines assessment include: • Contact of a sensitive habitat or shoreline is predicted by predictive modelling and surveillance. • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed via SCAT.	The criteria for the termination of pre-emptive shorelines assessment at any given location are: • Locations predicted to be contacted by hydrocarbons have been contacted. • The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate).

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational monitoring operational plan – Monitoring of contaminated resources	Monitoring of contaminated resources 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 monitoring of contaminated resources 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 monitoring of contaminated resources may also support the assessment of environmental impacts, as determined through subsequent SMPs. Monitoring of contaminated resources 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).	Monitoring of contaminated resources will be triggered when a sensitive habitat or shoreline is predicted to be contacted by hydrocarbons by predictive modelling and surveillance.	The criteria for the termination of monitoring of contaminated resources 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. Monitoring of contaminated resources survey sites established at sensitive habitat and shoreline locations will continue to be monitored during OSM. The formal transition from monitoring of contaminated resources to OSM will begin on cessation of spill response and clean-up activities.

ANNEX C: PAP OSM BASELINE REVIEW

TABLE C-1 – verification of OSM-BIP combined EMBA baseline needs with the PAP EMBA

Location	Water quality impact assessment	Sediment quality impact assessment	Intertidal and coastal habitat assessment	Seabirds and shorebirds	Marine megafauna assessment-reptiles	Marine megafauna assessment-whale sharks, dugong and cetacean	Benthic habitat assessment	Marine fish and elasmobranch assemblages assessment	Fisheries impact assessment	Heritage and social impact assessment	Relevance to PAP combined WCCS
Exmouth Gulf											✓
Ningaloo World Heritage Area					Turtle	Whale Shark					✓
					Sea snake	Cetaceans & dugong					✓
Muiron Islands											✓
Barrow Island					Flatback turtle						✓
					Green turtle, hawksbill turtle, sea snake						✓
Montebello Islands											✓
Southern Pilbara to Onslow											✓
Middle Pilbara & Northern Pilbara (to Dampier)											✓
Dampier Archipelago			Mangroves								✓
											✓
Karratha – Port Hedland					Flatback turtle						✓
											✓
Reefs, shoals and banks											✓

Key	
	First-strike monitoring priority
	Lower priority for first-strike monitoring
✓	Contact at <7 days and >10% probability

ANNEX D: TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef – Refer to Mangrove/ Turquoise Bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrohlos Islands: Pelseart Group
Abrohlos Islands: Wallabi Group
Abrohlos Islands: Easter Group
Dampier
Rankin Bank & Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands – Southern Island Group
Montebello Island – Stephenson Channel Nth TRP
Montebello Island – Champagne Bay and Chippendale channel TRP
Montebello Island – Claret Bay TRP
Montebello Island – Hermite/Delta Island Channel TRP
Montebello Island – Hock Bay TRP
Montebello Island – North and Kelvin Channel TRP
Montebello Island – Sherry Lagoon Entrance TRP
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Island – Dampier
Rosemary Island – Dampier
Legendre Island – Dampier
Karratha Gas Plant

KGP to Withnell Creek
KGP to Northern Shore
KGP Fire Pond & Estuary
KGP to No Name Creek
Broome
Sahul Shelf Submerged Banks and Shoals
Clerke Reef (Rowley Shoals)
Imperieuse Island (Rowley Shoals)
Mermaid Reef (Rowley Shoals)
Scott Reef
Oiled Wildlife Response
Exmouth
Dampier region
Shark Bay

APPENDIX E: NATIONAL OFFSHORE PETROLEUM SAFETY AND ENVIRONMENTAL MANAGEMENT AUTHORITY REPORT FORM

NOPSEMA
Australia's offshore energy regulator

FORM

Recordable Environmental Incident Monthly Report

Document No: N-03300-FM0928 A198750

Date: 10/01/2024

Due Date: By the 15th day of the following month.

Send completed form to: submissions@nopsema.gov.au via secure file transfer at https://securefile.nopsema.gov.au/filedrop/submissions

Reference: Regulation 50

Please check the following boxes if applicable to this report **Nil Incident Report:** ☐ **Final report for this activity:** ☐

Titleholder name:		**Titleholder business address:**		**Title of environment plan for the activity:**	
Activity type: (e.g. drilling, seismic, production)		**Month, Year:**		**Facility name and type :** (e.g. MODU, Seismic Vessel, FPSO)	
Contact person:		**Email:**		**Phone:**	
Incident date	**All material facts and circumstances** (including release volumes to environment if applicable)	**Performance outcome(s) and/or standard(s) breached**	**Action taken to avoid or mitigate any adverse environmental impacts of the incident**	**Corrective action taken, or proposed, to stop, control or remedy this incident**	**Action taken, or proposed, to prevent a similar incident occurring in future**

Note 1: As at 28 February 2014, amendments to the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations changed from environmental performance objective to environmental performance outcome. If you are reporting against an EP accepted under the old Regulations please report against the environmental performance objective for that activity.

Note 2: This form may be submitted in conjunction with the 'Injuries and Fatalities – Monthly Summary Report' Form available at www.nopsema.gov.au

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- individuals who make a request under the *Freedom of Information Act 1982*
- the Australian National Audit Office and other privately appointed auditors
- NOPSEMA's legal advisors.

NOPSEMA may occasionally be required to disclose information to overseas recipients in order to discharge its functions or exercise its powers, or to perform its necessary business activities. Information about how you can access, or seek correction to, your personal information is contained in NOPSEMA's APP Privacy Policy at www.nopsema.gov.au/privacy. If you have an enquiry or a complaint about your privacy, please contact NOPSEMA's Privacy Contact Officer on 08 6188 8700 or by email at privacy@nopsema.gov.au.

NOPSEMA
Australia's offshore energy regulator

FORM

Report of an accident, dangerous occurrence or environmental incident

Document No: N-03300-FM0831 A159980

Date: 07/09/2023

For instructions and general guidance in the use of this form, please see the last page.

Part 1 is required within 3 days of a notified incident.
Part 2 is required within 30 days of notified incident.

What was the date and time of the initial verbal incident notification to NOPSEMA?			
Date		**Time**	

NOTE: It is a requirement to request permission to interfere with the site of an accident or dangerous occurrence. Refer OPGGS(S)R, Reg. 2.49.

What is the date and time of this written incident report?			
Date		**Time**	

What type of incident is being reported?	*Please tick appropriate incident type*	
Accident or dangerous occurrence		Complete parts 1A, 1B & part 2
Environmental Incident		Complete parts 1A, 1C
BOTH (Accident or dangerous occurrence AND environmental incident)		Complete ALL parts (1A, 1B, 1C, 2)

Please tick all applicable (one or more categories) *To use electronically: MS Word 2007-10 – click in check box*

Categories *Please select one or more*	Accidents	Death or Serious injury Lost time injury ≥3 days	☐ ☐
	Dangerous occurrences	Hydrocarbon release >1 kg or ≥80 L (gas or liquid) Fire or explosion Collision marine vessel and facility Could have caused death, serious injury or LTI Damage to safety-critical equipment Unplanned event – implement ERP Pipeline incident Well kick >50 barrels Other _____	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
	Environmental incidents	Hydrocarbon release Chemical release Drilling fluid/mud release Fauna Incident Other _____	☐ ☐ ☐ ☐ ☐

Part 1A – Information required within 3 days of an accident, dangerous occurrence or environmental incident

General information – all incidents

1.	**Where did the incident occur?**	Facility / field / title name		
		Site name and location *Latitude/longitude*		
2.	**Who is the registered operator/titleholder or other person that controls the works site or activity?**	Name		
		Business address		
		Business phone no.		
3.	**When did the incident occur?**	Time and time zone		
		Date		
4.	**Did anyone witness the incident?**	Yes or No *If yes, provide details below*		
	Witness details	Witness no. 1	Witness no. 2	Witness no. 3
	Full name			
	Phone no. (Business hours)			
	Phone no. (Home) (Mobile)			
	Email (Business) (Private)			
	Postal address			
	NB: If more witnesses, copy and insert this section (4) here, and add extra witness numbers appropriately			
5.	**Details of person submitting this information**	Name		
		Position		
		Email		
		Telephone no.		
6.	**Brief description of incident**			
7.	**Work or activity being undertaken at time of incident**			

Part 1A – Information required within 3 days of an accident, dangerous occurrence or environmental incident

General information – all incidents

8.	**What are the internal investigation arrangements?**					
9.	**Was there any loss of containment of any fluid (liquid or gas)?**	Yes or No *If Yes, provide details below*				
		Type of fluid (liquid or gas) *If hydrocarbon release, please complete item no.15 as well*	Hydrocarbon ☐ *Please specify*_____ Non-hydrocarbon ☐ *Please specify*_____			
		Estimated quantity *Liquid (L), Gas (kg)*				
		Estimation details	Calculation	☐	Measurement	☐
			*Please specify*_____			
		Composition *Percentage and description*				
		Known toxicity to people and/or environment	Toxicity to people			
			Toxicity to environment			
		How was the leak/spill detected?	F&G detection ☐ CCTV ☐		Visual ☐ Other ☐	
		Did ignition occur?	No ☐ Yes ☐		Immediate ☐ Delayed ☐	
			If yes, what was the likely ignition source		Hotwork ☐ Spark electrical source ☐ Spark metallic contact ☐ Hot surface ☐ Other ☐	
10.	**Has the release been stopped and/or contained?**	Yes or No				
		Duration of the release *hh:mm:ss*				
		Estimated rate of release *Litres or kg per hour*				
11.	**Location of release**	What or where is the location of the release?				
		What equipment was involved in the release?				
		Is this functional location listed as safety-critical equipment?				

Part 1A – Information required within 3 days of an accident, dangerous occurrence or environmental incident

General information – all incidents

12.	**Weather conditions** *Please complete as appropriate*	Ambient temperature C°				
		Relative humidity %				
		Wind speed m/s *NB: for enclosed areas use* Air change per hour				
		Wind direction e.g. from SW				
		Significant wave height m				
		Swell m				
		Current speed m/s				
		Current direction e.g. from SW				
13.	**Hydrocarbon release details** *If hydrocarbon fluid (liquid or gas) was released, please complete this section as well*	System of hydrocarbon release	Process ☐ Drilling ☐ Subsea / Pipeline ☐		Utilities ☐ Well related ☐ Marine ☐	
		Estimated inventory in the isolatable system *Litres or kg*				
		System pressure and size of piping or vessel *diameter (d in mm)* *length (l in m)* *or volume (V in L)*	Pressure MPag			
			Size Piping (d) and Piping (l) or Vessel (V)			
		Estimated equivalent hole diameter *d in mm*				

Part 1B - Complete for accidents or dangerous occurrences

Accidents and dangerous occurrences information

	Was NOPSEMA notified through the dedicated notification phone line? *Phone No.* 1300 674 472		Yes	☐	No	☐
15.	**Action taken to make the work-site safe**	Was permission given by a NOPSEMA inspector to interfere with the site? OPGGS(S)R 2.49.	Yes	☐	No	☐
		Action taken				
		Details of any disturbance of the work site				

Part 1B - Complete for accidents or dangerous occurrences

Accidents and dangerous occurrences information

16.	**Was an emergency response initiated?**		Yes	☐	No	☐
		Type of response	Manual Automatic alarm	☐ ☐	Muster Evacuation	☐ ☐
		How effective was the emergency response?				

17.	**Was anyone killed or injured?** *Provide details below*		Yes	☐	No	☐		
	Injured persons (IP)	**Casualty no. 1**						
	If different from item 2. Employer name		Employer address					
	Employer phone no.		Employer email					
	IP full name							
	IP date of birth		Sex	M	☐	F	☐	
	IP residential address							
	IP phone no. (Work)		IP phone no. (Home) (Mobile)					
	IP occupation/job title		Contractor or core crew					
	Details of injury							
	Based on TOOCS (refer last page) Nature of injury	a. Intracranial injury b. Fractures c. Wounds, lacerations, amputations, internal organ damage	☐ ☐ ☐	d. Burn e. Nerve or spinal cord injury f. Joint, ligament, muscle or tendon injury g. Other _____	☐ ☐ ☐ ☐			
	Part of body	G1. Head or face G2. Neck G3. Trunk G4. Shoulder or arm	☐ ☐ ☐ ☐	G5. Hip or leg G6. Multiple locations G7. Internal systems G8. Other _____	☐ ☐ ☐ ☐			
	Mechanism of injury	G0. Falls, stepping, kneeling, sitting on object G1. Hitting object G2. Being hit or trapped	☐ ☐ ☐	G3. Exposure to sound or pressure G4. Muscular stress G5. Heat, cold or radiation G6/7 Chemical, biological substance G8. Other _____	☐ ☐ ☐ ☐ ☐			
	Agency of injury	1. Machinery or fixed plant 2. Mobile plant or transport 3. Powered equipment 4. Non-power equipment	☐ ☐ ☐ ☐	5/6. Chemicals, materials, substances 7. Environmental agencies 8. Human or animal agencies 9. Other _____	☐ ☐ ☐ ☐			

Part 1B - Complete for accidents or dangerous occurrences

Accidents and dangerous occurrences information

	Details of job being undertaken					
	Day and hour of shift	Day *e.g. 5th day of 7 (5 / 7)*		Hour *e.g. 3rd hour of 12 (3 / 12)*		
	NB: If more casualties, please copy/paste this section (19) for each additional casualty and insert here					
18.	**Was there any serious damage?** *Provide details below*			Yes	☐	No ☐
	Details	**Item 1**		**Item 2**		**Item 3**
	Equipment damaged					
	Extent of damage					
19.	**Will the equipment be shut down?** *Yes or No*					
	If yes, for how long?					
	NB: If more equipment seriously damaged, please copy/paste this section as required					
20.	**Will the facility be shut down?**	Yes or No *If yes provide details below*				
	Facility shutdown	Date				dd/mm/yyyy
		Time				24-hour clock
		Duration				days / hours / minutes
21.	**Immediate action taken/intended, if any, to prevent recurrence of incident.**	**Action**		**Responsible party**		**Completion date** *Actual or intended*
22.	**What were the immediate causes of the incident?**					

Attachments

Are you attaching any documents?			Yes or No *If yes, provide details below*	
No.	**ID**	**Revision**	**Date**	**Title/description**

Insert or delete rows as required

Part 1C – Complete for environmental incidents

Environmental Impacts

23.	**What is the current environment plan for this incident?**	Environment plan		
24.	**Has the incident resulted in an impact to the environment?**	Yes or No *If yes, provide details below*		
		Incident details *e.g. estimated area of impact, nature/significance of impact*		
		ENVIRONMENTAL RECEPTORS		
		Open ocean ☐ Shoreline ☐ Population centre ☐ Stakeholders ☐ Other sensitivity ☐ *e.g. conservation area, nesting beach*	Macroalgae ☐ Coral Reef ☐ Benthic invertebrates ☐ Seagrass ☐ Mangrove ☐	
		Further details		

	Details	**Environment 1**	**Environment 2**	**Environment 3**
	Location of receiving environments *Lat/Long*			
	Date & time of impact			
	Action taken to minimise exposure			
	Specify each matter protected under Part 3 of the EPBC Act impacted			

NB: If more environments were damaged, please copy/paste this section (Item E3) and add extra data

25.		Yes or No *If yes, provide details*	

Part 1C – Complete for environmental incidents

Environmental Impacts

	Are any environments at risk? ***Including as a result of spill response measures***	Details *e.g. zone of potential impact*				
		AT RISK ENVIRONMENTS				
		Open ocean	☐	Macroalgae	☐	
		Shoreline	☐	Coral Reef	☐	
		Population Centre	☐	Benthic Invertebrates	☐	
		Stakeholders	☐	Seagrass	☐	
		Other sensitivity *e.g. conservation area, nesting beach*	☐	Mangrove	☐	

	Details	**Environment 1**	**Environment 2**	**Environment 3**
	Estimated location of 'at-risk' environments			
	Estimated impact date & time			
	Action required to minimise exposure			
	Specify each matter protected under Part 3 of the EPBC Act at risk			

NB: If more environments at risk of damage, please copy/paste this section (Item E2) and add extra data

26.	**Was an oil pollution emergency plan activated?**	Yes or No	
		If yes, what action has been implemented /planned?	
		If yes, how effective is/was the spill response?	
27.	**Was an environmental monitoring program initiated?**	Yes or No	
		If yes, what actions have been implemented and/or planned?	

28.	**Did the incident result in the death or injury of any fauna?**	Yes or No (If yes provide details of species in the table below)		
	Injured fauna	**Species 1**	**Species 2**	**Species 3**
	Species name (common or scientific name)			
	Number of individuals killed or injured	Killed: Injured:	Killed: Injured:	Killed: Injured:

NB: If more species were injured or killed, please copy/paste this section (Item E4) and add extra data

29.	**Actions taken to avoid or mitigate any adverse**	**Action**	**Responsible party**	**Completion date** *Actual or intended*

Part 1C – Complete for environmental incidents

Environmental Impacts

	environmental impacts of the incident.			
	NB: If more actions, please add extra rows as required			
30.	**Corrective actions taken, or proposed, to stop, control or remedy the incident.**	**Action**	**Responsible party**	**Completion date** *Actual or intended*
	NB: If more actions, please add extra rows as required			
31.	**Actions taken, or proposed, to prevent a similar incident occurring in the future.**	**Action**	**Responsible party**	**Completion date** *Actual or intended*
	NB: If more actions, please add extra rows as required			

Attachments

Are you attaching any documents?			Yes or No *If yes, provide details below*	
No.	**ID**	**Revision**	**Date**	**Title/Description**
Insert or delete rows as required				

Part 2 – Information required within 30 days of accident or dangerous occurrence

NOPSEMA acknowledges that in many circumstances an operator may not have completed an investigation within 3 days of an accident or first detection of a dangerous occurrence and agrees that these items must be provided within 30 days unless otherwise agreed, in writing with NOPSEMA. In circumstances where an investigation has been completed within 3 days, and these items are available (supplemented, as required by any attachments) this part should also be completed at that time.

32.	**Has the investigation been completed?**	Yes or No	
	Root cause analysis *What were the root causes?*	Root cause 1	
		Root cause 2	
		Root cause 3	
		Other root causes	
	Full report *Describe investigation in detail, including who conducted the investigation and in accordance with what standard/procedure with reference to attachments listed in the 'attachments table' (following) as applicable*		

33.	**Actions to prevent recurrence of same or similar incident**	**Action**	**Responsible party**	**Completion date** *Actual or intended*
	NB: Add or delete rows as appropriate			

Attachments (Insert/delete rows as required)

Are you attaching any documents?			Yes or No *If yes, provide details below*	
No.	**ID**	**Revision**	**Date**	**Title/description**

Instructions and general guidance for use:

1. The use of this form is voluntary and is provided to assist operators and titleholders to comply with their obligations to give notice and provide reports of incidents to NOPSEMA under the applicable legislation.
2. Accidents, dangerous occurrences or environmental incidents can all be reported using this same form.
3. The applicable legislation for incident reporting is:
    a. Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009 [OPGGS(S)R]; and
    b. Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 [OPGGS(E)R], for facilities located in Commonwealth waters; or
    c. for facilities located in designated coastal waters, the relevant State or Territory Act and associated Regulations where there is a current conferral of powers to NOPSEMA.
4. In the context of this form an incident is a reportable incident as defined under:
    a. OPGGSA, Schedule 3, Clause 82.
    b. OPGGS(E)R, regulation 4.
5. This form should be used in conjunction with NOPSEMA Guidance Notes available on the NOPSEMA website:
    a. N-03300-GN0099 Notification and Reporting of Accidents and Dangerous Occurrences
    b. N-03300-GN0926 Notification and Reporting of Environmental Incidents
6. Part 1 requires completion for all incidents; then ALSO complete part 2 if the incident is an accident or dangerous occurrence.
7. NOPSEMA considers that a full report will contain copies of documentary material referenced and/or relied on in the course of completing this form, which may include (but not be limited to) as appropriate: witness statements, management system documents, drawings, diagrams and photographs, third party reports (audit, inspection, material analysis etc.), internal records and correspondence.
8. This form is intended to be completed electronically using Microsoft Word by completing the unshaded cells which will expand as required to accept the information required and the check boxes where relevant (NB: check boxes may appear shaded and have reduced functionality in MS Word versions prior to 2010).
9. The completed version of this form (and any attachments, where applicable) should be emailed to:

    submissions@nopsema.gov.au

    or submitted via secure file transfer at: https://securefile.nopsema.gov.au/filedrop/submissions as soon as practicable, but in any case, within three days of the incident.

References

NOPSEMA website: www.nopsema.gov.au

TOOCS – Type of Occurrence Classification System.
The *Type of Occurrence Classification System, Version 3.0* (TOOCS3.0) was developed to improve the quality and consistency of data. This system aligns with the International Classification of Diseases – Australian Modification (ICD10-AM). Type of occurrence classification system (TOOCS) 3rd Edition May 2008 | Safe Work Australia

OPGGS(S)R. Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009. Select Legislative Instrument 2009 No. 382 as amended and made under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006.*Commonwealth of Australia.
OPGGS(E)R. Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009. Statutory Rules 1999 No. 228 as amended and made under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006.* Commonwealth of Australia.

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NOPSEMA collects your personal information for the purpose of investigating accidents, dangerous occurrences and environmental incidents under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*.

NOPSEMA will not use or disclose your personal information for any other purpose without your consent, unless it is required or authorised by law, or relates to NOPSEMA's enforcement activities. Your personal information may be disclosed to the following organisations, entities or individuals:

- individuals who make a request under the *Freedom of Information Act 1982*
- the Australian National Audit Office and other privately appointed auditors
- other law enforcement bodies (for example, the police or the coroner)
- NOPSEMA's legal advisors.

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APPENDIX F: CONSULTATION

Appendix F: North Rankin Complex Operations Environment Plan

August 2024

Revision 0

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TABLE OF CONTENTS

1. CONSULTATION APPROACH

For the North Rankin Complex Operations Environment Plan (EP), Woodside has taken a broad and proactive tiered consultation approach over a period of 2 months.

This approach was aimed at raising public awareness of the consultation opportunity and to enable self-identification. It included a social media campaign and advertising in national, state, regional and Indigenous newspapers.

The tiered consultation approach discharges regulation 25 of the Environment Regulations' requirements. The approach is proactive, has enabled self-identification, and has raised broad awareness of Woodside's activities related to this EP.

1.1 Tiered Consultation Approach

Regulation 25	Woodside's consultation approach assessed and identified relevant persons, enabled two-way dialogue and engagement, and included email and phone call follow up. The approach taken comfortably satisfies the requirements of regulation 25: to give relevant persons sufficient information and allow a reasonable period of time for consultation (see Section 5 in the EP).
Proactive	To raise awareness of the consultation process, and to enable grass-roots consultation, Woodside undertook advertised regional consultation roadshows and facilitated consultation at regional community events.
Self-Identification	The consultation timeframe was also extended at the request of some relevant and non-relevant persons.
Broad Understanding	Broad communication activities were undertaken to build awareness of consultation and enable self-identification, supported by targeted education materials.

1.2 Building on the Existing Consultation Approach

For this EP, Woodside has built on its consultation methodology and undertaken additional consultation activities throughout the consultation period to ensure a reasonable period of time and sufficient information has been provided to relevant persons so that they can make an informed assessment of the possible consequences of the activity on their functions, interests or activities.

The approach for this included:

- a consultation period of up to 2 months
- undertaking proactive consultation activities to provide sufficient information to relevant persons
- raising awareness of the consultation process and opportunity to provide feedback
- driving participation in the consultation process.

1.3 Traditional Custodian Consultation Approach

Woodside has meaningful long-term relationships with relevant Traditional Owners specifically tailored to provide for effective engagement which is continuous and is not confined to individual EPs, instead covering all EPs and other issues that are relevant at the time of engagement.

To this end, consultation on any particular EP, including the North Rankin Complex Operations EP, happens before, during and after the designated consultation period in a more holistic

manner allowing for an understanding of the bigger picture and accommodating cultural requirements. Ongoing consultation remains an important part of consulting with Traditional Custodians based on availability, cultural protocols and the preferred method of consultation for each relevant person.

For the past 12 months, where requested, Woodside has been working with nominated representative bodies to develop Consultation Agreement Frameworks which aim to enable each group to be consulted in a manner requested by the group.

1.4 NGO Consultation Approach

Woodside has an established history of consulting with environmental non-government organisations (NGOs) as part of its EP consultation. In its methodology (Section 5.3.4, Table 5-2), NGOs are considered “Other non-government groups or organisations” and “Research institutes and local conservation groups or organisations”. Relevant person identification for these categories is based on registered non-government groups or organisations with current targeted public website material specific to the proposed activity at the time of developing the EP and who have demonstrated functions, interests or activities relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation.

So that NGOs were given sufficient information and a reasonable period of time to consult, Woodside:

- advertised the consultation period (social and traditional media)
- directly consulted NGOs
- participated in regional community events (which were advertised) in the Pilbara which could be attended by any NGOs including local groups (if NGOs attended these sessions, they did not identify themselves).

2. RELEVANCY ASSESSMENT

2.1 Assessment of Relevant Persons for the Proposed Activity

The result of Woodside's assessment of relevant persons in accordance with regulation 25 (1) of the Environment Regulations is outlined below at Table 1 and Table 2.

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

As per Woodside's methodology (Section 5 in the EP), assessment of relevant persons is informed by the EMBA, shown in Figure 1-1.

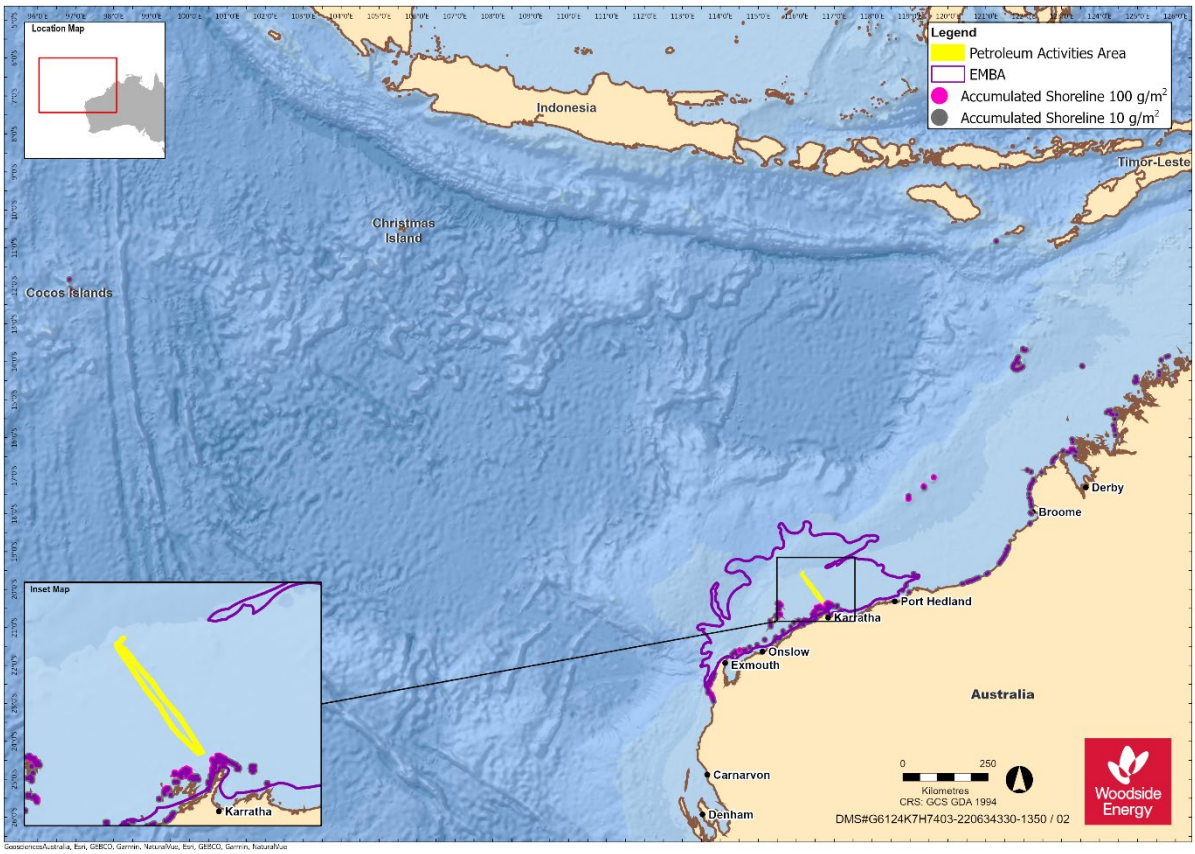

Figure 1-1: Petroleum Activities Area and EMBA for this EP

2.2 Table 1: Assessment of Relevance

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Commonwealth and WA State Government Departments or Agencies – Marine			
Australian Border Force (ABF)	Responsible for coordinating maritime security	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. ABF's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Department of Foreign Affairs and Trade (DFAT)	Responsible for promoting and protecting Australia's interests internationally and contributes to global stability and economic growth. DFAT manages Australia's relationships and interaction with the governments of our neighbouring countries.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. DFAT has no direct role in the management of the Commonwealth marine area but has an interest in ensuring that consultation with foreign entities, both private and government, is effective and is aligned with Australia's interests. DFAT manages Australia's relationships and interaction with the governments of our neighbouring countries. The proposed activity has the potential to impact DFAT's functions, interests or activities as the EMBA overlaps Indonesian waters.	Yes
Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA)	Responsible for managing fisheries within 12 nm of Christmas Island and Cocos (Keeling) Island	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a). The Cocos (Keeling) Island Marine Aquarium Fishery is active in the EMBA. DITRDCA's responsibilities may be relevant to the activity as the above mentioned fishery is active in the EMBA.	Yes
Australian Communications and Media Authority (ACMA)	Regulator for communications and media	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. ACMA's responsibilities may be relevant to the activity as there may be telecommunications lines that intersect the Operational Area.	Yes
Australian Fisheries Management Authority (AFMA)	Responsible for managing Commonwealth fisheries	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. The North West Slope Trawl and Western Deepwater Trawl Fishery are active in the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		AFMA's responsibilities may be relevant to the activity as the abovementioned fisheries are active in the EMBA.	
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. The North West Slope Trawl and Western Deepwater Trawl Fishery are active in the EMBA. DAFF – Fisheries responsibilities may be relevant to the activity as the abovementioned fisheries 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, Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery are active in the Operational Area.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The Exmouth Gulf Prawn Managed Fishery, Kimberley Crab Managed Fishery, Kimberley Gillnet and Barramundi Managed Fishery, Kimberley Prawn Managed Fishery, Mackerel Managed Fishery, Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Northern Demersal Scalefish Managed Fishery, Onslow Prawn Managed Fishery, Pearl Oyster Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Cocos (Keeling) Islands Marine Aquarium Fishery have been active in the EMBA within the last 5 years. DPIRD's responsibilities may be relevant to the activity as the government department responsible for State fisheries.	
Department of Transport (DoT)	Legislated responsibility for oil pollution response in State waters	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has a hydrocarbon spill risk, which may require DoT response in State waters.	Yes
Department of Planning, Lands and Heritage (DPLH)	Responsible for state level land use planning and management, and oversight of Aboriginal cultural heritage and built heritage matters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. There is known Maritime Cultural Heritage overlapping the EMBA.	Yes
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 are known shipwrecks overlapping the EMBA which the Western Australian Museum may be responsible for.	Yes
Pilbara Ports Authority	PPA encompasses the Ports of Ashburton, Dampier, Port Hedland and Varanus Island. PPA oversees the operation of the greenfield ports of Anketell, Balla	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has the potential to impact Pilbara Ports Authority's responsibilities as the EMBA overlaps the Pilbara Ports Authority's area of responsibility.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	Balla, Cape Preston East, Cape Preston West and Urala. PPA oversees the Shipping and Pilotage Act 1967 (SPA) ports of Barrow Island, Cape Preston, Onslow and Port Walcott.		
Port of Cocos (Keeling) Island	Responsible for the operation of the Port of Cocos (Keeling) Island.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The EMBA does not overlap Port of Cocos (Keeling) Island's area of responsibility. Woodside chose to contact Port of Cocos (Keeling) Island at its discretion in line with Section 5.3.7.	No
Kimberley Ports Authority	Responsible for the operation of the Port of Broome.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has the potential to impact Kimberley Ports Authority's responsibilities as the EMBA overlaps Kimberley Ports Authority's area of responsibility.	Yes
Commonwealth and WA State Government Departments or Agencies – Environment			
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)	DAFF administers, implements and enforces the Biosecurity Act 2015. The Department requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft)	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DAFF – Biosecurity's responsibilities may be relevant to the proposed activities in the EMBA in the prevention of introduced marine species.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. The Dept requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory.		
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Responsible for implementing Commonwealth policies and programs to support climate change, sustainable energy use, water resources, the environment and our heritage. Administers the *Underwater Cultural Heritage Act 2018* in collaboration with the States, Northern Territory and Norfolk Island, which is responsible for the protection of shipwrecks, sunken aircraft and other types of underwater	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DCCEEW's responsibilities may be relevant to the proposed activities in the EMBA as there are potential environmental impacts from the proposed activity. There is known Maritime Cultural Heritage overlapping the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	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 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)	Department of relevant State Minister	Required to be consulted under regulation 25(1)(c) of the Environment Regulations.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Commonwealth Commercial fisheries and representative bodies			
North West Slope Trawl Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes
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 fished by licence holders.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 fisheries are active in the Operational Area. The North West Slope Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA. CFA's functions may be relevant to the activity as the above mentioned fisheries 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.	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.	No
Pearl Producers Association (PPA)	Peak representative organisation of The Australian South Sea Pearling Industry, with members in Western Australia and the Northern Territory	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Pearl Oyster Managed Fishery is active within the EMBA. PPA's functions may be relevant to the activity as the Pearl Oyster Managed Fishery is active in the EMBA.	Yes
State Commercial fisheries and representative bodies			

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Marine Aquarium Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
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 (Area 2)	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area (Area 2) and EMBA (Area 1, 2 and 3) and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	
West Coast Deep Sea Crustacean Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Specimen Shell Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. While Woodside assessed the fishery as relevant in the Operational Area and EMBA, WAFIC has advised there is no need to consult this fishery given the proposed activities. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
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.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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.	
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, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Land Hermit Crab Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area or the EMBA.	No
Onslow Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
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.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	
Exmouth Gulf Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Gascoyne Demersal Scalefish Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area or the EMBA.	No
West Coast Demersal Scalefish Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area or the EMBA.	No
Northern Demersal Scalefish Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
West Coast Rock Lobster Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. Although the fishery overlaps the EMBA, the	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		fishery has not been active in the 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.	
Nickol Bay Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Kimberley Crab Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Cocos (Keeling) Islands Marine Aquarium Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Kimberley Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Kimberley Gillnet and Barramundi Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
WA North Coast Shark Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years.	No
Demersal Scalefish Fishery: Pilbara Trawl Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	
Pilbara Trap Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
Pilbara Line Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	Yes
Western Australian Fishing Industry Council (WAFIC)	Represents the interests of commercial fishers with licences in State waters.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Mackerel Managed Fishery, Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery have been active in the Operational Area within the last 5 years. The Exmouth Gulf Prawn Managed Fishery, Kimberley Crab Managed Fishery, Kimberley Gillnet and Barramundi Managed Fishery, Kimberley Prawn Managed Fishery, Mackerel Managed	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Fishery, Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Northern Demersal Scalefish Managed Fishery, Onslow Prawn Managed Fishery, Pearl Oyster Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Cocos (Keeling) Islands Marine Aquarium 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. WAFIC issued consultation materials to relevant commercial fisheries licence holders. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would be undertaken only in the event of an unplanned emergency scenario.	
Western Rock Lobster Council	Represents the interests of the Western Rock Lobster Managed Fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The West Coast Rock Lobster Managed Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the West Coast Rock Lobster Managed Fishery, the Western Rock Lobster Council has also been assessed as not relevant.	No
Recreational marine users and representative bodies			
Gascoyne Recreational Marine Users	Gascoyne-based dive, tourism and charter operators	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Andro Maritime Services Australia, Aquatic Adventure Exmouth, Birds Eye View, Blue Horizon Charters, Blue Lightning Charters, Cape Immersion Tours, Coastal Adventure Tours, Coral Bay Ecotours, Cruise Ningaloo, Dampier Island Tourism, Dive Ningaloo, Evolution Fishing Charters, Exmouth adventure co., Exmouth Dive Centre, Indian Chief Charters, Innkeeper Sport Fishing, Innkeeper Sport Fishing Charter, Kings Ningaloo Reef Tours, Live Ningaloo, Mahi Mahi Fishing Charters, Montebello Island Safaris, Ningaloo Aviation, Ningaloo Blue, Ningaloo Coral Bay Boats, Ningaloo Discovery, Ningaloo Ecology Cruises, Ningaloo Fly Fishing, Ningaloo Marine Interaction,	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Ningaloo Reef Dive, Ningaloo Reef To Range Tours, Ningaloo Safari Tours, Ningaloo Sportfishing Charters, Ningaloo Whaleshark N Dive, Ningaloo Whaleshark Swim, Ocean Eco Adventures, Peak Sportfishing Charters, Pelican Charters, Sail Ningaloo, Sea Force Charters, Set The Hook, Three Islands, Top Gun Charters, Ultimate Watersports, Venture Ningaloo, View Ningaloo, Warrior Princess Charters, Yardi Creek Boat Tours, Aoa International Pty Ltd, Aspa Pastrikos, Austanley Pty Ltd, Blue Juice Tours Pty Ltd, Bondall Pty Ltd, C Emery Fishing Pty Ltd, Chapel Nominees Pty Ltd, D & N Nominees Pty Ltd, Eco-Abrolhos Pty Ltd, Fawesome Expeditions Pty Ltd, Fire Tiger Pty Ltd, G. C. Bass nominees pty ltd, Jostan Holdings Pty Ltd, Km Charters Pty Ltd, Kw Marine Pty Ltd, L & S Family Holdings Pty Ltd, Lulamanzi Investments Pty Ltd, Lyons Family Super Pty Ltd, Makalee Pty Ltd, Maritime Engineering Services Pty Ltd, Melkit Pty Ltd, Millennial Charters Pty Ltd, Monkey Mia Yacht Charters Pty Ltd, Monster Sportfishing Adventures Pty Ltd, Mr Corry E Wilson, North Star Cruises Australia Pty Ltd, On Strike Charters (Wa) Pty Ltd, Reel Force Charters Pty Ltd, Regalchoice Holdings Pty Ltd, Seafresh Holdings Pty Ltd, Sharkbay Charters Pty Ltd, Surefire Marine Services Pty Ltd, The Great Escape Charter Company Pty Ltd, W.A Maritime Investments Pty Ltd. Activities have the potential to impact Gascoyne-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	
Pilbara/Kimberley Recreational Marine Users	Pilbara/Kimberley-based dive, tourism and charter operators	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Marine Rescue Dampier, Port Walcott Volunteer Marine Rescue , West Pilbara Volunteer Sea Search and Rescue Group, Archipelago Adventures, Hampton Harbour Boat & Sailing Club, Port Walcott Yacht Club , Reef Seeker Charters, King Bay Game Fishing Club, Nickol Bay Sport Fishing Club, Bardina Pty Ltd, Down the Line Charters Pty Ltd, Mackerel Islands Pty Ltd, Ocean Charters Pty Ltd, Serenity Isles Trading Company Pty Ltd, Wyndham Fishing Tours Pty Ltd, Charter Travel Company Pty Ltd, Kw Marine Pty Ltd, Norbrick Pty Ltd, Sail Ningaloo Pty Ltd, Tiffom Pty Ltd, Aoa International Pty Ltd, Australian Port And Marine Services Pty Ltd, Bloor Street Investments Pty Ltd, Blue Juice Tours Pty Ltd, Bondall Pty Ltd, Brefjen Nominees Pty Ltd, Broome Chiropractic Pty Ltd, C Emery Fishing Pty Ltd, Chapel Nominees Pty Ltd, Charter Express Pty Ltd, CM Ventures Pty Ltd, Coastway Investments Pty Ltd, Coral Princess Cruises (Nq) Pty Ltd, Discovery Holiday Parks Pty Limited, Diversity Charter Company Wa Pty Ltd, Eco-Abrolhos Pty Ltd	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Fawesome Expeditions Pty Ltd, G. C. Bass nominees Pty ltd, Hartley Motorcycles Pty Ltd, Hotel And Resort Investments Pty Ltd, Humbug Fishing Pty Ltd, Kimberley Getaway Cruises Pty Ltd, Kimberley Marine Pty Ltd, Kimberley Quest Adventures Pty Ltd, King Sound Resort Hotel Pty Ltd, Kw Marine Pty Ltd, L & S Family Holdings Pty Ltd, Lake Argyle Cruises Pty Ltd, Lombadina Aboriginal Corporation, Lugger Enterprises Pty Ltd, Lulamanzi Investments Pty Ltd, Mackerel Islands Pty Ltd, Mal Miles Adventures Pty Ltd, Marine Agents Australia Pty Ltd, Maritime Engineering Services Pty Ltd, Melkit Pty Ltd, Millennial Charters Pty Ltd, Monster Sportfishing Adventures Pty Ltd, North Star Cruises Australia Pty Ltd, Ocean Charters Pty Ltd, Sea 2 Pty Ltd, Sealife Charters Pty Ltd, Split Tide Pty Ltd, Steven Douglas Chambers, Super Yachts Perth Pty Ltd, The Great Escape Charter Company Pty Ltd, W.A Maritime Investments Pty Ltd, Willie Creek Pearl Farm Pty Ltd. Activities have the potential to impact Pilbara/Kimberley-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	
Recfishwest	Represents the interests of recreational fishers in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Activities have the potential to impact recreational fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Marine Tourism WA	Represents the interests of marine tourism in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Activities have the potential to impact recreational fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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
BP Developments Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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
MidOcean Gorgon	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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
PE Wheatstone	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Titleholder or Operator's permit areas overlaps the EMBA.	
Kyushu Electric Wheatstone	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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
Finder Energy (Finder No 16)	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Jadestone	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit 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
Vermilion Oil & Gas	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d). of the Environment Regulations Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Santos NA Energy Holdings / Santos Ltd / Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Coastal Oil and Gas / Fox Resources	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Bounty Oil and Gas	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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 / KATO NWS / KATO Amulet	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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
JX Nippon O&G Exploration (Australia)	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Beagle No. 1	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Peak Industry Representative bodies			
Australian Energy Producers (AEP)	Represents the interests of oil and gas explorers and producers in Australia.	Woodside has applied its methodology for 'Peak Industry Representative bodies' under regulation 25(1)(d) of the Environment Regulations. AEP's responsibilities are identified as having an intersect with Woodside's planned activities in the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Traditional Custodians and nominated representative corporations			
Balanggarra 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 EMBA overlaps the North Kimberley Marine Park, over which the North Kimberley Marine Park Joint Management Plan 2016 specifies Wunambal Gaambera Aboriginal Corporation, Balanggarra Aboriginal Corporation, Wilinggin Aboriginal Corporation and Yawoorroong Miriwoong Gajirrawoong Yirrgeb Noong Dawang Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
Bardi and Jawi Niimidiman 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 EMBA does overlap a native title determination or ILUA held by the Bardi and Jawi Niimidiman Aboriginal Corporation. The Bardi and Jawi Niimidiman Aboriginal Corporation is also party to the Bardi Jawi Conservation Estate Indigenous Land Use Agreement, which overlaps the EMBA.	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
Dambimangari Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 25(1)(d) of the Environment Regulations. The EMBA does not overlap and is not coastally adjacent to a native title claim held by the Dambimangari Aboriginal Corporation. The EMBA overlaps the Lalang-gaddam / Camden Sound Marine Park and Lalang-gaddam Horizontal Falls Marine Park, which are jointly managed by Dambimangari Aboriginal Corporation and DBCA. The Dambimangari Aboriginal Corporation is also party to the Dambimangari KSCS Marine Parks ILUA, which overlaps the EMBA.	Yes
Gogolanyngor Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The Jabirr Jabirr/Ngumbarl native title claim, for which the Gogolanyngor Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA. The Bindunbur native title claim, for which the Gogolanyngor Aboriginal Corporation, Nimanburr Aboriginal Corporation and Nyul Nyul PBC Aboriginal Corporation are the Registered Native Title Body Corporates, overlaps the EMBA.	
Karajarri Traditional Lands Association (Aboriginal Corporation)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Karajarri People (Area A) and Karajarri People (Area B) native title claim, for which the Karajarri Traditional Lands Association (Aboriginal Corporation) is the Registered Native Title Body Corporate, overlaps the EMBA. The Karajarri Traditional Lands Association (Aboriginal Corporation) is also party to the Great Sandy Desert Project ILUA – Infrastructure and Karajarri Traditional Lands Association KSCS Eighty Mile Beach ILUA, which overlaps the EMBA. The EMBA overlaps the Eighty Mile Beach Marine Park, over which the Eighty Mile Beach Marine Park management plan 2014-2024 specifies Karajarri Traditional Lands Association, Nyangumarta Warrarn Aboriginal Corporation, Wanparta Aboriginal Corporation and Nyangumarta Karajarri Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
Kariyarra Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Kariyarra native title claim, for which the Kariyarra Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBAThe Kariyarra Aboriginal Corporation *is also party to the* Kariyarra and State ILUA, which is coastally adjacent to the EMBA.	Yes
Mayala Inninalang 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 Mayala People native title claim, for which the Mayala Inninalang Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA. The Mayala Inninalang Aboriginal Corporation is also party to the Mayala Country Marine Park Indigenous Land Use Agreement, which overlaps the EMBA.	Yes
Murujuga Aboriginal Corporation (MAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		MAC is the Nominated Representative Corporation under the Burrup and Maitland Industrial Estates Agreement (BMIEA), which is coastally adjacent to the EMBA. The EMBA overlaps the Murujuga National Park. MAC was established to represent the members of competing Native Title claims over Murujuga, collectively known as the Ngarda Ngarli and comprising Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-Goo-Tt-Oo people. The determination of the competing Native Title claims resulted in no native title being found over the lands subject to the BMIEA or below the low water mark. MAC also owns and co-manages the Murujuga National Park, is responsible for the Dampier Archipelago National Heritage Place and is progressing the World Heritage nomination of the Murujuga Cultural Landscape.	
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim, which the Baiyungu, Thalanyji and Yinggarda people are party to, overlaps the EMBA. The NTGAC and 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
Ngarluma Aboriginal Corporation (NAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma/Yindjibarndi People native title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates, overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		NAC is also party to the RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement) and Anketell Port, Infrastruture Corridor and Industrial Estates Agreement, which overlaps the EMBA. The EMBA overlaps the Dampier Marine Park, over which the North West Management Plan 2018 specifies Ngarluma Aboriginal Corporation and Yindjibarndi Aboriginal Corporation as representing people who may have cultural interests in the marine park.	
Nimanburr Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Bindunbur native title claim, for which the Gogolanyngor Aboriginal Corporation, Nimanburr Aboriginal Corporation and Nyul Nyul PBC Aboriginal Corporation are the Registered Native Title Body Corporates, overlaps the EMBA.	Yes
Nyangumarta Karajarri Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Nyangumarta-Karajarri Overlap Proceeding (Yawinya) native title claim, for which the Nyangumarta Karajarri Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA. The Nyangumarta Karajarri Aboriginal Corporation is also party to the Nyangumarta Karajarri and Anna Plains Station ILUA, Nyangumarta Karajarri and Mandora Station ILUA and NKAC KSCS Eighty Mile Beach ILUA, which overlap the EMBA. The EMBA overlaps the Eighty Mile Beach Marine Park, over which the Eighty Mile Beach Marine Park management plan 2014-2024 specifies Karajarri Traditional Lands Association, Nyangumarta Warrarn Aboriginal Corporation, Wanparta Aboriginal Corporation and Nyangumarta Karajarri Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
Nyangumarta Warrarn Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Nyangumarta People (Part A) native title claim, for which the Nyangumarta Warrarn Aboriginal Corporation is the Registered Native Title Body Corporate for. The Nyangumarta Warrarn Aboriginal Corporation is also party to the Nyangumarta Warrarn Aboriginal Corporation & Mandora Pastoral Lease ILUA, Nyangumarta PBC KSCS ILUA and Nyangumarta Warrarn Aboriginal Corporation & Wallal Downs Pastoral Lease ILUA, which overlaps the EMBA. The EMBA overlaps the Eighty Mile Beach Marine Park, over which the Eighty Mile Beach Marine Park management plan 2014-2024 specifies Karajarri Traditional Lands Association, Nyangumarta	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Warrarn Aboriginal Corporation, Wanparta Aboriginal Corporation and Nyangumarta Karajarri Aboriginal Corporation as representing people who may have cultural interests in the marine park.	
Nyul Nyul PBC 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 Bindunbur native title claim, for which the Gogolanyngor Aboriginal Corporation, Nimanburr Aboriginal Corporation and Nyul Nyul PBC Aboriginal Corporation are the Registered Native Title Body Corporates, overlaps 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 Kuruma Marthudunera (Part A) and Kuruma Marthudunera Part B People native title claims, for which Robe River Kuruma Aboriginal Corporation is the Registered Native Title Body Corporate, is coastally adjacent to the EMBA. The Robe River Kuruma Aboriginal Corporation is party to the KM & YM Indigenous Land Use Agreement 2018, which overlaps the EMBA, and the RTIO Kuruma Marthudunera People ILUA which is coastally adjacent to the EMBA.	Yes
Walalakoo Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 25(1)(d) of the Environment Regulations. The Walalakoo native title claim, for which the Walalakoo Aboriginal Corporation is the Registered Native Title Body Corporate does not overlap and is not adjacent to the EMBA. Woodside chose to contact Walalakoo Aboriginal Corporation at its discretion in line with section 5.3.7 in the EP.	No
Wanjina-Wunggurr (Native Title) 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 Dambimangari native title claim, for which the Wanjina-Wunggurr (Native Title) Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA. The Wanjina-Wunggurr (Native Title) Aboriginal Corporation is also party to the Dambimangari KSCS Marine Parks ILUA, which overlaps the EMBA.	Yes
Wanparta Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The Ngarla and Ngarla #2 (Determination Area A) native title determination, for which the Wanparta Aboriginal Corporation is the Registered Native Title Body Corporate overlaps the EMBA. The Wanparta Aboriginal Corporation is party to the Ngarla Pastoral ILUA, which overlaps the EMBA, and the Ngarla PBC KSCS ILUA, which is coastally adjacent to the EMBA. The EMBA overlaps the Eighty Mile Beach Marine Park, over which the Eighty Mile Beach Marine Park management plan 2014-2024 specifies Karajarri Traditional Lands Association, Nyangumarta Warrarn Aboriginal Corporation, Wanparta Aboriginal Corporation and Nyangumarta Karajarri Aboriginal Corporation as representing people who may have cultural interests in the marine park.	
Wilinggin 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. Wilinggin Aboriginal Corporation is an agent of Wanjina-Wunggurr (Native Title) Aboriginal Corporation for Ngarinyin people, and is responsible for the management of the Wilinggin Indigenous Protected Area. The EMBA overlaps the North Kimberley Marine Park, over which the North Kimberley Marine Park Joint Management Plan 2016 specifies Wunambal Gaambera Aboriginal Corporation, Balanggarra Aboriginal Corporation, Wilinggin Aboriginal Corporation and Yawoorroong Miriwoong Gajirrawoong Yirrgeb Noong Dawang Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
Wirrawandi Aboriginal Corporation (WAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Yaburara and Mardudhunera People native title claim, for which WAC is the Registered Native Title Body Corporate, overlaps the EMBA. WAC is party to the KM & YM Indigenous Land Use Agreement 2018 and the Cape Preston Project Deed (YM Mardi ILUA), which overlaps the EMBA, and the Cape Preston West Export Facility, which is coastally adjacent to the EMBA.	Yes
Wunambal Gaambera Aboriginal Corporation (WGAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. WGAC is an agent of Wanjina-Wunggurr (Native Title) Aboriginal Corporation for Wunambal and Gaambera people. The EMBA overlaps the North Kimberley Marine Park, over which the North Kimberley Marine Park Joint Management Plan 2016 specifies Wunambal Gaambera Aboriginal Corporation, Balanggarra Aboriginal Corporation, Wilinggin Aboriginal Corporation and Yawoorroong Miriwoong Gajirrawoong	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Yirrgeb Noong Dawang Aboriginal Corporation as representing people who may have cultural interests in the marine park.	
Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation ("MG Corp") which is also the representative of Miriuwung and Gajerrong #4 and Miriuwung and Gajerrong #1 RTNBCs – PBCs)	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 EMBA overlaps the North Kimberley Marine Park, over which the North Kimberley Marine Park Joint Management Plan 2016 specifies Wunambal Gaambera Aboriginal Corporation, Balanggarra Aboriginal Corporation, Wilinggin Aboriginal Corporation and Yawoorroong Miriwoong Gajirrawoong Yirrgeb Noong Dawang Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
Yawuru Native Title Holders Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Rubibi Community native title claim, for which the Yawuru Native Title Holders Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA. The Yawuru Native Title Holders Aboriginal Corporation is also party to the Yawuru Nagulagun / Roebuck Bay Marine Park ILUA and Yawuru Prescribed Body Corporate ILUA - Broome, which overlaps the EMBA.	Yes
Yindjibarndi Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma/Yindjibarndi People native title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates, overlaps the EMBA. The EMBA overlaps the Dampier Marine Park, over which the North West Management Plan 2018 specifies Ngarluma Aboriginal Corporation and Yindjibarndi Aboriginal Corporation as representing people who may have cultural interests in the marine park.	Yes
Yinggarda Aboriginal Corporation (YAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d). The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim, which the Baiyungu, Thalanyji and Yinggarda people are party to, overlaps the EMBA. The NTGAC	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		and YAC are the Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people.	
Native Title Representative Bodies			
Kimberley Land Council (KLC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 25(1)(d) of the Environment Regulations. KLC is the Native Title Representative Body for the Kimberley region of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders. KLC's functions may be relevant to the proposed activity in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation.	Yes
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 25(1)(d) of the Environment Regulations. YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders. The NTGAC nominated representative is YMAC. Woodside has therefore consulted the NTGAC via YMAC.	Yes
Self-identified First Nations groups			
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma and Yindjibarndi People, the NWS JVs and Woodside entered into an agreement on 22 December 1998 (Agreement). NYFL was subsequently incorporated under the terms of the Agreement to act as trustee for the trust established to benefit the Ngarluma and Yindjibarndi People and the Roebourne Aboriginal Community. Subsequent to that, the Ngarluma people settled their native title claim and established their nominated representative corporation, the Ngarluma Aboriginal Corporation (PBC); and the Yindjibarndi people settled their native title claim and established their nominated representative corporation, the Yindjibarndi Aboriginal Corporation (PBC). The Ngarluma Aboriginal Corporation	Yes

		and the Yindjibarndi Aboriginal Corporation are the appropriate representative bodies for consultation in relation to cultural interests. NYFL's functions may be relevant to the proposed activity in relation to its functions under the Agreement.	
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
City of Karratha	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek, Point Samson, Roebourne, Whim Creek and Wickham.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The City of Karratha's area of responsibility overlaps the EMBA.	Yes
Shire of Carnarvon	Local government governed by the Local Government Act 1995	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations.	Yes

	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.	The Shire of Carnarvon's area of responsibility overlaps the EMBA.	
Town of Port Hedland	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Cooke Point, Port Hedland, Pretty Pool, Redbank, South Hedland, Wedgefield and Yandeyarra.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Town of Port Hedland's area of responsibility overlaps the EMBA.	Yes
Shire of Wyndham-East Kimberley	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Crossing Falls, Kalumburu, Kununurra, Lake Argyle, Lakeside, Packsaddle, Wyndam	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 Wyndham-East Kimberley's area of responsibility overlaps the EMBA.	Yes
Shire of Derby/West Kimberley	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Derby, Fitzroy Crossing and Camballin	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 Derby/West Kimberley's area of responsibility overlaps the EMBA.	Yes

Shire of Broome	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Mile, Bilingurr, Broome, Cable Beach, Cape Leveque, Coconut Well, Djugun, Lombadina, Minyirr, Morell Park, Skuthorpe	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Broome's area of responsibility overlaps the EMBA.	Yes
Shire of Cocos (Keeling) Islands	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Home Island and West Island.	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 Cocos (Keeling) Islands' area of responsibility overlaps the EMBA.	Yes
Indian Ocean Territories Regional Development Organisation	Responsible for supporting the economic development of Christmas and Cocos (Keeling) Islands.	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 Indian Ocean Territories Regional Development Organisation's interests have the potential to be impacted by the proposed activities.	Yes
Exmouth Community Liaison Group (CLG)	The Exmouth CLG represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Exmouth region.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Base Marine, Bhagwan Marine, Cape Conservation Group Inc, Cape Range Riders, DBCA, Department of Defence, Department of Transport, Exmouth Bus Charter, Exmouth Chamber of Commerce and Industry, Exmouth District High School, Exmouth Escape Resort, Exmouth Freight and Logistics, Exmouth Game Fishing Club, Exmouth Tackle and Camping Supplies, Exmouth Visitors Centre, Exmouth Volunteer Marine Rescue, Fat Marine, Gascoyne Development Commission, Gun Marine Services, Ningaloo Centre, Ningaloo Lodge, Ningaloo Coast World Heritage Advisory Council, PHI Aviation, Offshore Unlimited, Shire of Exmouth, Santos, Terrafirma Offshore, WA Country Health Service. The Exmouth CLG's area of responsibility under its terms of reference overlaps the EMBA.	Yes

Karratha Community Liaison Group (CLG)	The Karratha CLG is the recognised community group that represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Pilbara region.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Karratha CLG's area of responsibility under its terms of reference does not overlap the EMBA. WA Police, Karratha Health Care, Development WA, Ngarluma Yindjibarndi Foundation Ltd (NYFL)*, Department of Education, Pilbara Ports Authority, Regional Development Australia, Pilbara Development Commission, Dampier Community Association, City of Karratha, Karratha & Districts Chamber of Commerce and Industry, Horizon Power, Murujuga Aboriginal Corporation (MAC)*. **NFYL and MAC were consulted directly as described above.* Under regulation 25(1)(e), Woodside, at its discretion, chose to assess the KLG as a relevant person.	Yes
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
Port Hedland 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 Port Hedland and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Port Hedland Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
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

East Kimberley 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 East Kimberley 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 East Kimberley Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Derby 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 Derby 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 Derby Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Broome 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 Broome 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 Broome 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 the EP.	No

Conservation Council of Western Australia (CCWA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations. 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
Australasian Centre for Corporate Responsibility (ACCR)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Woodside has assessed that ACCR'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 ACCR at its discretion in line with Section 5.3.7 of the EP.	No
Doctors for the Environment Australia (DEA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations. Woodside has assessed that DEA'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 DEA at its discretion in line with Section 5.3.7 of the EP.	No
Friends of Australian Rock Art. Inc (FARA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations.	Yes

		Woodside has assessed that FARA's public website material demonstrates 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).	
Market Forces	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 Market Forces' 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 Market Forces at its discretion in line with Section 5.3.7 of the EP.	No
Environs Kimberley	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Woodside has assessed that Environs Kimberley's public website material 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 Environs Kimberley at its discretion in line with Section 5.3.7 of the EP.	No
Save Our Songlines (SoS) and/or [Individual 1]	Representatives of Non-Government Organisation Save Our Songlines and/or [Individual 1]	Woodside has applied its methodology for 'Traditional Custodians and nominated representative corporations' and 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine Save Our Songlines (SoS) and/or [Individual 1] relevance for the proposed activity. Save Our Songlines and/or [Individual 1] stated interest is to stop or pause Scarborough gas and to stop new industry on the Burrup; and oppose planned expansion of the Burrup Hub industry by Woodside, Perdaman and Yara. In addition, their stated interests also include the protection of Murujuga rock art. As Save Our Songlines have raised concerns relating to the processing of greenhouse gases on Murujuga, Woodside considers that Save Our Songlines and/or [Individual 1] are relevant for this activity.	Yes
Telstra	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine Telstra's relevance for the proposed activity. There are known Telstra communication cables that intersect within the Operational Area.	Yes
Vocus	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine Vocus' relevance for the proposed activity. There are known Vocus communication cables in the vicinity of the Operational Area.	Yes

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.	No
Curtin University	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by Curtin University that intersects within the EMBA. Woodside chose to contact Curtin University at its discretion in line with Section 5.3.7.	No
Murdoch University	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by Murdoch University that intersects within the EMBA. Woodside chose to contact Murdoch University at its discretion in line with Section 5.3.7.	No
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There is no known research being undertaken by the CSIRO that intersects within the EMBA. Woodside chose to contact CSIRO at its discretion in line with Section 5.3.7.	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.	No

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.	No

3. CONSULTATION ACTIVITIES

3.1 North Rankin Complex Operations EP Consultation Activities

Woodside has been conducting extensive consultation with relevant persons and other parties for this EP since June 2024 when consultation commenced with interested and affected stakeholders as part of a planned, integrated and consistent approach to stakeholder engagement for Woodside's proposed opportunities.

A broad consultation process has been undertaken with relevant persons for the North Rankin Complex Operations EP. Consultation aims to be inclusive, transparent, voluntary, respectful and two-way. Consultation was undertaken by email, letter, phone call and/or meetings and through advertising.

3.2 Discharging Regulation 25 of the Environment Regulations

Woodside advertised the planned activities proposed for this EP in national, state and relevant local newspapers including (see Record of Consultation, reference 6.3). Regional newspapers do not require subscription and are available directly to households. All communities within or adjacent to the EMBA had access to this information via this information.

Newspaper	Coverage	Publication dates
The Australian	National	17 June 2024
The West Australian	Regional (WA)	17 June 2024
Pilbara News	Local (WA)	19 June 2024
Broome Advertiser	Local (WA)	20 June 2024
Kimberley Echo	Local (WA)	20 June 2024
North West Telegraph	Local (WA)	19 June 2024
Koori Mail	Indigenous	19 June 2024
National Indigenous Times	Indigenous	28 June 2024

A Consultation Information Sheet was provided to relevant persons and persons Woodside chose to contact (see Section 5.3.7 in the EP), which included details such as an activity overview, maps, a summary of key risks and/or impacts and management measures (Record of Consultation, reference 6.1.1).

Since the commencement of the initial consultation period (June 2024), the stakeholder Consultation Information Sheet has been available on Woodside's website. The Woodside Consultation Information Sheets include a toll-free 1800 phone number and Woodside's feedback email address (feedback@woodside.com).

The Woodside Consultation Activities webpage (accessible on the Consultation Information Sheet via a QR code, banners at community events and via social media content and advertisements) includes Consultation Information Sheets for the EPs on which Woodside is currently consulting, including this EP. The website page also features a subscribe field for EP-focused communications from Woodside.

Additional targeted information was provided to relevant marine users including AHO and AMSA – Marine Safety. This information included maps and additional information (such as GIS shape files) 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 in the EP).

Consultation activities undertaken with relevant persons are summarised at Appendix F, Table 2.

Engagement undertaken with persons or organisations Woodside assessed as not relevant but chose to contact (see Section 5.3.4 in the EP) or self-identified and Woodside assessed as not relevant are summarised at Appendix F, Table 3.

From 17 June 2024, Woodside commenced a geotargeted sponsored social media campaign covering various local government authorities within, or coastally adjacent to, the EMBA for the proposed activities. The campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations on how they can find out about Woodside's proposed activities by visiting Woodside's website.

Platform	Geotargeted Reach	Post Dates	Impact
Facebook	80km radius around - Broome - Derby - Exmouth - Onslow - Port Hedland - Roebourne - Karratha Age: 18-65+	17 June 2024 to 19 July 2024	Reach: 254,218 Frequency: 2.33 Impressions: 592,614 Clicks: 2,139 Click Through Rate%: 0.08%
Instagram			Reach: 116,698 Frequency: 1.62 Impressions: 189,101 Clicks: 146 Click Through Rate %: 0.08%

3.3 Proactive Consultation

3.3.1 Community engagement

The Community Information Sessions or community events that Woodside has conducted or attended are outlined below and captured in more detail in (Record of Consultation, reference 6.4). Woodside published advertisements ahead of these sessions and events in relevant local newspapers and on social media to support attendance.

Date (2024)	Location	Event (if applicable)
15 June	Dampier	WA Day Celebrations
25-26 June	Karratha	Pilbara Summit
26 July	Karratha	Community pop-up at Lo's Café
3-4 August	Karratha	FeNaCING Festival

3.3.2 Community Liaison Group Engagement

The Exmouth and Karratha Community Liaison Groups (CLGs) represent the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Exmouth and Karratha region. Woodside regularly meets with the two CLGs to discuss a range of issues including consultation of specific EPs.

3.3.3 Let's Talk – EP Newsletter

In March 2024, Woodside launched its first EP-focused newsletter as a new communication avenue to reach existing and potential stakeholders. Woodside is building on its existing consultation approach, providing additional resources to inform relevant persons about its EP consultation. The newsletter aims to provide periodic updates to relevant persons about EP consultation activities, case studies on effective consultation with relevant persons and other EP focused updates such as upcoming events where Woodside personnel will be consulting with the local community. It is distributed in a variety of locations as well as across digital platforms including on our website, and social media platforms. People can also subscribe to receive it. (Record of Consultation, reference 6.5.2).

Woodside also publishes the Karratha Community Update newsletter which includes a QR code and encourages people to go to the Woodside Consultation Activities webpage to subscribe and find information about EPs (Record of Consultation, reference 6.5.1).

3.4 Self-Identification

Social media campaign - Are you a relevant person?

In October 2023, Woodside commenced a targeted social media campaign, both organic and sponsored, aimed at community members of key towns within the Kimberley, Pilbara, Gascoyne and Murchison regions. The campaign delivered targeted information to several profiled relevant person groups via story and feed content with text and a short accessible video (Record of Consultation, reference 6.3.3).

The campaign aimed to support self-identification and provided information about Woodside's consultation with relevant persons when preparing EPs and encouraged participation in the consultation process.

Six different videos with specific information to potential relevant persons groups were launched on Facebook and Instagram:

- Local communities – volunteering
- Local communities – apprentices/trainees
- Commercial fishing
- Recreational fishing
- Recreational marine users
- Traditional Owners.

Results of final campaign at June 2024 are as follows:

Categories	Reach	Frequency	Impressions	Clicks	Click-through rate %
Marine Users	251,479	2.73	687,641	640	0.09%
Volunteering	97,934	1.76	171,908	180	0.10%

Apprentices & trainees	79,950	1.70	136,183	200	0.15%
Commercial Crab Fisheries	199,619	2.07	412,298	323	0.08%
Traditional Owner Groups	257,203	2.49	641,572	574	0.09%
Commercial Fisheries Demersal	260,274	2.65	689,876	546	0.08%

The commercial fisheries, recreational fisheries and Traditional Owners videos are available on the Woodside Consultation Activities webpage.

3.5 Traditional Custodian Specific Consultation

In addition to the approaches above including community information sessions, additional activities were undertaken with relevant Traditional Custodians, which were specifically designed to provide for effective engagement with Traditional Custodians and so that information was provided in a form that was readily accessible and appropriate (see Section 5.5 in the EP). Consultation undertaken specifically with Traditional Custodians for this EP includes direct engagement with nominated representative bodies via the contact listed on the Office of the Registrar of Indigenous Corporations (ORIC) website, requesting advice on how they would like to be engaged and asking whether other members and/or individuals should be consulted. This has resulted in:

- 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 6.1.2) and phone calls to provide context to the consultation made.

Ongoing efforts were made to engage and develop relationships with these bodies via a variety of means such as email, phone calls, alternative contacts, texts, social media and, in some cases, physical visits.

Consultation meetings with attendees decided by Traditional Custodian groups and supported by senior Woodside representatives, subject matter experts and First Nations Relations advisers with skills and experience in community engagement. Meetings are developed through a two-way consultation process to ensure effective information sharing via:

- mutually agreed agenda avoiding time pressure
- encouraging Traditional Custodian attendees to control the pace of the meeting and pause at any time to ask questions, seek clarification or provide feedback
- visual aids such as posters, presentations, simplified technical videos and real-world pictures and footage
- emphasis on potential planned and unplanned risks and impacts of the activity
- ample opportunity for questions and feedback

- discussion about ongoing relationship development and opportunities
- distribution of hard-copy Consultation Information Sheets and Summary Information Sheets
- meeting all costs such as sitting fees, travel, legal support and executive support and other support required
- advertising in Indigenous publications such as the National Indigenous Times and Koori Mail.

Woodside also ran a geotargeted sponsored social media campaign (Record of Consultation, reference 6.3.2) 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).

These social media posts were developed with input from Indigenous representatives. Social media is a highly effective means to engage Indigenous audiences as outlined in Indigenous Digital Life (Professor Carlson, 2021). Advertisements used language and information appropriate to Indigenous audiences and feedback from community engagements indicates a high level of penetration for this process.

Woodside has employed a diverse range of techniques to allow relevant persons to become aware of the proposed activity and how it may affect their functions, activities or interests, and to understand their ability to provide feedback. The combination of 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.

4. TABLE 2: CONSULTATION REPORT WITH RELEVANT PERSONS OR ORGANISATIONS

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 2 denotes an item raised by a stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that item.

4.1 COMMONWEALTH AND WA STATE GOVERNMENT DEPARTMENTS OR AGENCIES – MARINE

4.1.1 Australian Border Force (ABF)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed ABF advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to ABF, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to ABF on 18 June 2024 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 ABF with the opportunity to provide feedback over a 2 month period.

4.1.2 Australian Communications and Media Authority (ACMA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed ACMA advising of the proposed activity (Record of Consultation, reference 6.2.4), provided a Consultation Information Sheet, a submarine cables map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to ACMA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- On 12 July 2024, ACMA responded and thanked Woodside for the opportunity to comment on this EP (SI Report, reference 48.1) and:
  - **(1)** confirmed the operational areas are not in the vicinity of existing protection zones.
  - **(2)** noted Woodside is aware of submarine cables in the area operated by Telstra and recently installed cables operated by Vocus.
  - **(3)** recommended that Woodside contact the AHO for further assistance identifying submarine cables that may be impacted by the proposed activities.
  - **(4)** advised no additional consultation is required for this activity.
- On 29 February 2024, Woodside emailed ACMA (SI Report 3.2) and:
  - **(1)** acknowledged the advice regarding the protection zones.
  - **(2)** confirmed consultation information was provided to Telstra and Vocus.
  - **(3)** noted that AHO can be contacted for further assistance identifying submarine cables.
  - **(4)** noted that ACMA does not require additional consultation for this activity.

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) Operational areas are not in the vicinity of any existing protection zones.	**(1)** **Woodside assessment**: Woodside noted ACMA's confirmation that the operational areas are not in the vicinity of existing protection zones. **Woodside response:** Woodside acknowledged the advice regarding existing protection zones.	**(1)** Not required.
(2) Operational areas are in the vicinity of submarine cables.	**(2)** **Woodside assessment:** Woodside noted ACMA's advice that the operational areas are in the vicinity of submarine cables. **Woodside response:** Woodside confirmed it consulted with Telstra and Vocus.	**(2)** Not required.
(3)	**(3)**	**(3)**

Contact the AHO for further assistance identifying cables.	**Woodside assessment:** Woodside noted ACMA's recommendation to contact the AHO for further assistance identifying cables. **Woodside response**: Woodside confirmed that the AHO could be contacted should further assistance be required to identify submarine cables.	Not required.
(4) No further consultation required for this activity.	**(4)** **Woodside assessment:** Woodside accepts that ACMA does not require further consultation. **Woodside response**: Woodside noted that ACMA does not require further consultation.	**(4)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP 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 ACMA 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to ACMA on 18 June 2024 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 addressed and responded to ACMA over a 2 month period.		

4.1.3 Australian Fisheries Management Authority (AFMA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed AFMA advising of the proposed activity (Record of Consultation, reference 6.2.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to AFMA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to AFMA on 18 June 2024 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 AFMA with the opportunity to provide feedback over a 2 month period.

4.1.4 Australian Hydrographic Office (AHO)

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed AHO advising of the proposed activity (Record of Consultation, reference 6.2.5), provided a Consultation Information Sheet, shipping lanes map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to AHO, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to AHO on 19 June 2024 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 AHO with the opportunity to provide feedback over a 2 month period.		

4.1.5 Australian Maritime Safety Authority (AMSA) – Marine Pollution

Summary of information provided and record of consultation for this EP: • On 13 June 2024, Woodside emailed AMSA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to AMSA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website. • **On 20 August 2024, Woodside emailed AMSA and provided a copy of the oil Pollution First Strike Plan (SI Report, reference 57.1).**		
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 7.2.5 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to AMSA on 18 June 2024 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 AMSA with the opportunity to provide feedback over a 2 month period.

4.1.6 Australian Maritime Safety Authority (AMSA) – Marine Safety

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed AMSA advising of the proposed activity (Record of Consultation, reference 6.2.6), provided a Consultation Information Sheet, a shipping lane map, GIS shapefiles and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to AMSA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- On 19 July 2024, AMSA emailed Woodside (SI Report, reference 52.1) and:
  - **(1)** provided a map of vessel traffic plot for the area and noted heavy vessel traffic would be encountered in the area.
  - **(2)** noted Woodside's considerations in the consultation email, including:
    - requested Woodside notify AMSA's Response Centre (ARC) 24-48 hours before operations commenced.
    - reminded Woodside to contact the AHO no less than four working weeks before operations commenced.
    - reminded Woodside that vessels should exhibit appropriate lights and shapes to reflect the nature of operation.
    - advised that Woodside should evaluate and implement adequate anti-collision measures.
- On 30 July 2024, Woodside thanked AMSA for its feedback (SI Report, reference 52.2) and:
  - **(1)** noted the map provided and the contact details to obtain shipping data.
  - **(2)** confirmed it will update the EP with AMSA's ARC for notifications.
- **(2)** On 9 August 2024, Woodside emailed AMSA (SI Report, reference 52.3) and:
  - confirmed it will notify AMSA's ARC and JRCC regarding vessel activities
  - confirmed it will notify AHO with details relevant to the operations
  - noted the advice regarding anti-collision measures.

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*
(1) Provided a map of vessel traffic and contact details for obtaining shipping data.	**(1)** **Woodside assessment:** Woodside noted AMSA's spatial data gateway and the map provided. **Woodside response:** Woodside thanked AMSA for providing the map and noted the contract vessels will comply with Marine Orders for safe vessel operations.	**(1)** Not required.
(2) Safe vessel operations considerations.	**(2)** **Woodside assessment:** Woodside ensures vessels are compliant with Marine Orders for safe vessel navigation. **Woodside response:** Woodside confirmed it updated AMSA's ARC as contact for notifications.	**(2)** Section 6 of the EP contains a number of controls that address AMSA's feedback on lighting and compliance with the international rule for preventing collisions at sea, specifically safety zones are established, vessels are required to comply with marine orders and the facility's collision prevention system will be implemented.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to AMSA on 19 June 2024 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 addressed and responded to ACMA over a 2 month period.

4.1.7 Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DAFF advising of the proposed activity (Record of Consultation, reference 6.2.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DAFF, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to DAFF on 18 June 2024 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 DAFF with the opportunity to provide feedback over a 2 month period.

4.1.8 Department of Defence (DoD)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DoD advising of the proposed activity (Record of Consultation, reference 6.2.3), provided a Consultation Information Sheet, a defence zone map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DoD, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to DoD on 18 June 2024 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 DoD with the opportunity to provide feedback over a 2 month period.

4.1.9 Department of Foreign Affairs and Trade (DFAT)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DFAT advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 18 June 2024, the email bounced back as the email address no longer exists.
- On 3 July 2024, Woodside emailed DFAT advising of the proposed activity, provided a Consultation Information Sheet and sought to confirm the best contact for consultation (SI Report, reference 3.1).
- On 10 July 2024, DFAT emailed Woodside (SI Report, reference 3.2) and:
    - confirmed the best contact for EP consultations.
    - **(1)** confirmed the Indonesia Branch had no feedback on this EP.
- **(1)** On 15 July 2024, Woodside thanked DFAT for its feedback (SI Report, reference 3.3).

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*
(1) The Indonesia Branch has no feedback for this EP.	**(1)** **Woodside assessment:** Woodside accepts DFAT has no feedback on this EP. **Woodside response:** Woodside thanked DFAT for confirming it has no feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP 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 DFAT 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to DFAT on 3 July 2024 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 DFAT over a 2 month period.		

4.1.10 Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DITRDCA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 18 June 2024, DITRDCA emailed Woodside (SI Report, Reference 4.1) and:
  - **(1)** confirmed it had no comments in relation to the project.
  - **(2)** asked if other areas of the Department had been consulted.

- **(1,2)** On 25 June 2024, Woodside thanked DITRDCA for its feedback and confirmed it had consulted AMSA for this EP (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) No comments in relation to this EP.	**(1)** **Woodside assessment:** Woodside noted DITRDCA's feedback. **Woodside response:** Woodside thanked DITRDCA for confirming it has no feedback.	**(1)** Not required.
(2) Consult other areas of the Department.	**(2)** **Woodside assessment:** Woodside searched for other branches of DITRDCA. **Woodside response:** Woodside confirmed it consulted AMSA for this EP.	**(2)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 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 DITRDCA 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to DITRDCA on 18 June 2024 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 DITRDCA over a 2 month period.

4.1.11 Department of Planning, Lands and Heritage (DPLH)

Summary of information provided and record of consultation for this EP:

• On 18 June 2024, Woodside emailed DPLH advising of the proposed activity (Record of Consultation, reference 6.2.16), provided a Consultation Information Sheet, a list of state shipwrecks and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to DPLH, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 of this EP 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to DPLH on 18 June 2024 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 DPLH with the opportunity to provide feedback over a 2 month period.		

4.1.12 Department of Primary Industries and Regional Development (DPIRD)

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed DPIRD advising of the proposed activity (Record of Consultation, reference 6.2.11), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to DPIRD, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to DPIRD on 18 June 2024 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 DPIRD with the opportunity to provide feedback over a 2 month period.		

4.1.13 Department of Transport (DoT)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DoT advising of the proposed activity (Record of Consultation, reference 6.2.10), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DoT, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- **On 20 August 2024, Woodside emailed DoT and provided a copy of the oil Pollution First Strike Plan (SI Report, reference 58.1).**

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 7.2.5 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to DoT on 18 June 2024 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 DoT with the opportunity to provide feedback over a 2 month period.

4.1.14 Kimberley Ports Authority (KPA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed KPA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to KPA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 KPA 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to KPA on 18 June 2024 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 KPA with the opportunity to provide feedback over a 2 month period.

4.1.15 Pilbara Ports Authority (PPA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed PPA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to PPA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 PPA 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to PPA on 18 June 2024 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 PPA with the opportunity to provide feedback over a 2 month period.

4.1.16 Western Australian Museum (WAM)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed WAM advising of the proposed activity (Record of Consultation, reference 6.2.17), provided a Consultation Information Sheet, a list of state shipwrecks and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to WAM, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 WAM 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to WAM on 18 June 2024 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 WAM with the opportunity to provide feedback over a 2 month period.

4.2 COMMONWEALTH AND WA STATE GOVERNMENT DEPARTMENTS OR AGENCIES – ENVIRONMENT

4.2.1 Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DAFF advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DAFF, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to DAFF on 18 June 2024 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 with the opportunity to provide feedback over a 2 month period.

4.2.2 Department of Biodiversity, Conservation and Attractions (DBCA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DBCA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DBCA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- On 16 July 2024, DBCA responded thanking Woodside for providing information on this EP (SI Report, reference 50.1). DBCA noted:
  - **(1)** the operations were in the vicinity of reserves managed by DBCA and given the ecological importance of areas potentially affected by a hydrocarbon release from the proposed activities, it was considered important that the baseline values and state of the potentially affected environment are appropriately understood and documented prior to operations commencing.
  - **(2)** it would like to have confidence that Woodside had established appropriate baseline survey data on the current state of areas supporting important ecological values and any current contamination if present within the area of potential impact of hydrocarbon releases.

- **(3)** it undertook monitoring in marine parks and reserves and published monitoring reports which were available on its website, however Woodside should be aware this monitoring was targeted to inform DBCA's values and objectives and was not necessarily suitable to provide baseline information for oil spill risk assessment and management planning.
- **(4)** it recommended Woodside refer to the Department of Climate Change, Energy, the Environment and Water's *National Light Pollution Guidelines for Wildlife* as a best-practice industry standard for managing potential impacts of light pollution on marine fauna.
- **(5)** in the event of a hydrocarbon release, it was requested that Woodside notify DBCA's Pilbara regional office as soon as practicable on (08) 9182 2000.
- **(6)** it would not implement an oiled wildlife management response on behalf of a petroleum operator except as part of a whole of government response mandated by regulatory decision makers.
- **(7)** Woodside should refer to the Department of Transport's web content regarding marine pollution and the Offshore Petroleum Industry Guidance Note of 2020 titled *Marine Oil Pollution: Response and Consultation Arrangements*. **(7)** Not required. Woodside noted and referred to DoT's web content.

- On 22 July 2024, Woodside responded thanking DBCA for its feedback (SI Report, reference 50.2). Woodside:
  - **(1)** Confirmed it maintained knowledge and an understanding of areas of ecological importance within and adjacent to operational areas.
  - **(2,3)** Advised its oil spill scientific monitoring program would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release.
  - **(4)** Confirmed it had considered DCCEEW's National Light Pollution Guidelines with respect to vessel activities. The impact assessment determined that the impacts of lighting were as low as reasonably practicable.
  - **(5)** Advised it had incorporated the DBCA Pilbara regional office telephone number as part of the notifications listed in the Oil Pollution First Strike Plan.
  - **(6)** Noted that DBCA would not implement an oiled wildlife management response on behalf of a petroleum operator.

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) Baseline values are understood and documented prior to commencement of activities.	**(1)** **Woodside assessment:** Woodside determined that areas of ecological importance, including marine parks and island conservation reserves, would not be impacted by planned activities. **Woodside response:** Woodside reaffirmed that areas of ecological importance in the proximity of the EP Operational Areas would be not impacted by planned activities.	**(1)** The EP demonstrates that the proposed activities are outside the boundaries of a proclaimed State Marine Park and identifies that there are no credible impacts to the values of any State Marine Parks as a result of planned activities (Section 4.8 and Section 6.7 of the EP). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6 of the EP.
(2) Establish the appropriate baseline survey data on the current state of the areas.	**(2)** **Woodside assessment**: Woodside maintains knowledge of areas of ecological importance adjacent to Operational Areas and its oil spill scientific monitoring	**(2)** Under the Oil Spill Scientific Monitoring Program preparedness, an annual review and update to

	program provides for a quantitative assessment of overall impacts in the event of an unplanned hydrocarbon release. **Woodside response:** Woodside responded that it utilises an information system to track current existing environment knowledge that is regularly updated. Woodside advised its oil spill scientific monitoring program provides for a quantitative assessment of overall impacts in the event of an unplanned hydrocarbon release.	environmental baseline studies database is completed and documented as described in this EP.
(3) Acquire the necessary information to implement a Before-After Control Impact (BACI) framework.	**(3)** **Woodside assessment:** Woodside reviewed the request about implementing a BACI framework and noted its oil spill scientific monitoring program (SMP) would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release. **Woodside response:** Woodside advised its oil spill scientific monitoring program (SMP) would provide for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors.	**(3)** Under the Oil Spill Scientific Monitoring Program preparedness, an annual review and update to environmental baseline studies database is completed and documented as described in this EP.
(4) Refer to DCCEEW's National Light Pollution Guidelines for Wildlife.	**(4)** **Woodside assessment:** Woodside noted DCCEEW's National Light Pollution Guidelines for Wildlife and that its impact assessment for light emissions is based on these recommendations. **Woodside response:** Woodside confirmed it had considered DCCEEW's National Light Pollution Guidelines for Wildlife and that lighting associated with this EP is required as a priority for safe operation.	**(4)** Woodside's impact assessment for light emissions is based on recommendations of the National Light Pollution Guidelines for Wildlife.
(5) Notify DBCA's Pilbara office as soon as practicable in the event of a hydrocarbon release.	**(5)** **Woodside assessment**: Woodside noted DBCA's 'Incidents and Emergency Response' process and need to include DBCA's Pilbara's contact information in Oil Pollution First Strike Plan.	**(5)** DBCA's Pilbara phone number has been incorporated into the Oil Pollution First Strike Plan for this EP (see Appendix G).

	Woodside response: Woodside confirmed the DBCA Pilbara phone number had been incorporated as part of the Oil Pollution First Strike Plan.	
(6) No oiled wildlife management response will be implemented except as part of a mandated government response.	**(6)** **Woodside assessment**: Woodside accepts that DBCA would not implement an oiled wildlife management response and notes its own Oiled Wildlife Response is included in the Oil Spill Preparedness and Response Mitigation Assessment for this EP. **Woodside response:** Woodside confirmed that DBCA would not implement an oiled wildlife management response on behalf of a petroleum operator.	**(6)** Woodside's Oiled Wildlife Response is included in the Oil Spill Preparedness and Response Mitigation Assessment for this EP (see Appendix D).
(7) Refer to the Department of Transport's guidance note: Marine Oil Pollution: Response and Consultation Arrangements.	**(7)** **Woodside assessment:** Woodside appreciated the recommendation to refer to the DoT's web content regarding marine pollution and the Offshore Petroleum Industry Guidance Note of 2020 titled Marine Oil Pollution: Response and Consultation Arrangements. **Woodside response:** Woodside noted the DoT's web content regarding marine pollution and the Offshore Petroleum Industry Guidance Note of 2020 titled Marine Oil Pollution: Response and Consultation Arrangements.	**(7)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.		

- Consultation Information provided to DBCA on 18 June 2024 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 addressed and responded to DBCA over a 2 month period.

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

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DCCEEW advising of the proposed activity (Record of Consultation, reference 6.2.15), provided a Consultation Information Sheet, a list of Commonwealth shipwrecks and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DCCEEW, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to DCCEEW on 18 June 2024 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 DCCEEW with the opportunity to provide feedback over a 2 month period.

4.2.4 Director of National Parks (DNP)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DNP advising of the proposed activity (Record of Consultation, reference 6.2.9), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DNP, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- On 11 July 2024, DNP emailed Woodside (SI report, reference 47.1) and noted:
  - **(1)** the planned activity did not overlap any Australian Marine Parks (AMPs) therefore there were no authorisation requirements from the DNP.
  - **(2)** to assist in the preparation of an EP for petroleum activities, NOPSEMA had worked closely with Parks Australia to develop and publish a guidance note that outlined what titleholders needed to consider and evaluate. Titleholders should ensure the EP:
    - Identifies and manages all impacts and risks on Australian marine park values (including ecosystem values) and had considered all options to avoid or reduce them to as low as reasonably practicable.
    - Clearly demonstrates the activity would not be inconsistent with the North-west Marine Parks Network Management Plan 2018.
  - **(3)** it did not require further notification of progress made in relation to this activity unless details regarding the activity changed and resulted in an overlap with a marine park or new impact, or for emergency responses.
  - **(4)** it wished to clarify the operational areas for this activity.
  - **(3)** the requirements for emergency responses.
- On 16 July 2024, Woodside responded thanking DNP for its emails (SI report, reference 47.2) and:
  - (1) noted DNP's confirmation that planned activities did not overlap any AMPs and there were no authorisation requirements.
  - (2) Confirmed Woodside had taken into consideration the 'Petroleum Activities and Australian Marine Parks' guidance note to ensure the EP:
    - Identified and managed all impacts and risks on AMP values (including ecosystem values) to an acceptable level.
    - Clearly demonstrated that the activities would not be inconsistent with the North-west Marine Parks Network Management Plan 2018.
  - (3) confirmed the location of the PAA and noted that support vessels were managed under the EP once they enter the PAA
  - (4) Confirmed Woodside would notify DNP in relation to these activities if details regarding the activities changed and resulted in an overlap with or new impact to a marine park, or for emergency responses.

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 do not overlap any Australian Marine Parks and there are therefore no authorisation requirements from the DNP.	**(1)** **Woodside assessment**: Woodside noted there were no authorisation requirements from the DNP.	**(1)** Not required.

	Woodside response: Woodside noted the DNP's confirmation that planned activities did not overlap AMPs and there are no authorisation requirements.	
(2) Ensure the EP identifies and manages all impacts and risks on AMP values, and clearly demonstrates that activities will not be inconsistent with the management plan.	**(2)** **Woodside assessment:** Woodside has considered the 'Petroleum Activities and Australian Marine Parks' guidance note to assess and manage impacts and risks to AMPs. **Woodside response:** Woodside confirmed it had taken into consideration the 'Petroleum Activities and Marine Parks' guidance note to ensure the EP identified and managed all risks on AMP values and clearly demonstrated that activities would not be inconsistent with the management plan.	**(2)** The EP demonstrates how Woodside will identify and manage all impacts and risks on Australian Marine Park values (including ecosystem values) to an ALARP and acceptable level and that the activity is not inconsistent with the management plan (see Section 6.8 of the EP).
(3) It does not require further notification of progress unless details regarding the activity change and result in an overlap with a marine park or new impact, or for emergency responses.	**(3)** **Woodside assessment:** Woodside will notify DNP in the event of relevant changes to the activity, or for emergency responses. **Woodside response**: Woodside confirmed it would notify DNP if activities changed and resulted in an overlap with or new impact to a marine park, or for emergency responses.	**(3)** Woodside will provide notification of significant change, as appropriate, to relevant persons as referenced in Table 7-7 of the EP. Woodside will ensure DNP is made aware of any incidences within a marine park for the activity, as per the commitment in the Oil Pollution First Strike Plan (Appendix G).
(4) Clarify the operational areas for this activity.	**(4)** **Woodside assessment:** The PAA included two operational areas and is 7km at its closest point to an AMP, Dampier Marine Park. **Woodside response**: Woodside confirmed the location of the PAA and noted that support vessels were managed under the EP once they enter the PAA.	**(4)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to DNP on 18 June 2024 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 addressed and responded to DNP over a 2 month period.

4.2.5 Ningaloo Coast World Heritage Advisory Committee (NCWHAC)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed NCWHAC advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to NCWHAC, following up on the proposed activity (Record of Consultation, reference 6.2.50 and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 NCWHAC 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to NCWHAC on 18 June 2024 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 NCWHAC with the opportunity to provide feedback over a 2 month period.

4.3 COMMONWEALTH AND STATE GOVERNMENT DEPARTMENTS OR AGENCIES – INDUSTRY

4.3.1 Department of Energy, Mines, Industry Regulation and Safety (DEMIRS)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DEMIRS advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DEMIRS, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to DEMIRS on 18 June 2024 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 2 month period.

4.3.2 Department of Industry, Science and Resources (DISR)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DISR advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DISR, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to DISR on 18 June 2024 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 2 month period.

4.4 COMMONWEALTH COMMERCIAL FISHERIES AND REPRESENTATIVE BODIES

4.4.1 Commonwealth Fisheries Association (CFA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed CFA advising of the proposed activity (Record of Consultation, reference 6.2.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to CFA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to CFA on 18 June 2024 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 2 month period.

4.4.2 North West Slope Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed North West Slope Trawl Fishery individual licence holders advising of the proposed activity (Record of Consultation, reference 6.2.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to North West Slope Trawl Fishery individual licence holders, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 North West Slope Trawl 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to North West Slope Trawl Fishery on 18 June 2024 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 North West Slope Trawl Fishery with the opportunity to provide feedback over a 2 month period.		

4.4.3 Pearl Producers Association (PPA)

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed PPA advising of the proposed activity (Record of Consultation, reference 6.2.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to PPA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 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 PPA 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to PPA on 18 June 2024 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 PPA with the opportunity to provide feedback over a 2 month period.

4.4.4 Western Deepwater Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Western Deepwater Trawl Fishery individual licence holders advising of the proposed activity (Record of Consultation, reference 6.2.7), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Western Deepwater Trawl Fishery individual licence holders, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Deepwater Trawl 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Western Deepwater Trawl Fishery on 18 June 2024 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 Deepwater Trawl Fishery with the opportunity to provide feedback over a 2 month period.

4.5 STATE COMMERCIAL FISHERIES AND REPRESENTATIVE BODIES

4.5.1 Western Australian Fishing Industry Council (WAFIC)

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed WAFIC advising of the proposed activity and to initiate consultation with relevant individual licence holders for this activity (SI Report, reference 13.1).
- **(1)** On 21 June 2024, WAFIC emailed individual licence holders advising of the proposed activity and copied Woodside (SI Report, reference 13.2).
- **(1)** On 21 June 2024, WAFIC emailed Woodside to confirm the list of fisheries that were contacted and confirmed it will provide feedback after consultation period closes (SI Report, reference 13.3).
- On 28 June 2024, Woodside acknowledged the information was distributed to individual licence holders (SI Report, reference 13.4).
- On 23 May 2024, WAFIC sent an email to Woodside (SI Report, reference 13.5) and:
    - **(1)** confirmed it had not received any feedback or concerns from its industry regarding the EP.
    - **(2)** advised it appreciated Woodside's ongoing communication with mariners regarding issuing notices on activity commencement and distances around temporary exclusion zones, and WAFIC asked to be included in any vessel look-ahead associated with this EP.
    - asked for confirmation that in the event of an unplanned event, Woodside would:
        - **(3)** include WAFIC as contact in the oil spill response planning documents to ensure contact is made within 24 hours of the event notification.
        - **(4)** maintain a list of WA commercial fisheries that could potentially be impacted.
        - **(5)** have a suitable OSMP in place.
    - **(6)** expressed minor concerns regarding the impacts of decreased water quality from the proposed activities.
    - **(7)** It had no further comments regarding the proposed activity at this stage.
- On 31 July 2024, Woodside responded thanking WAFIC for its email (SI Report, reference 13.6). Woodside:
    - **(1)** noted there were no concerns from industry regarding the EP.
    - **(2)** confirmed it would keep WAFIC informed regarding activities and vessel movements where vessels would be in the Operational Area for more than 3 weeks.
    - **(3)** confirmed it would, at the relevant time, engage with relevant persons or organisations as appropriate and in alignment with the OSPRMA for this EP.
    - **(4)** confirmed it maintains a list of WA commercial fisheries that have a potential for interaction within the PAA and the EMBA.
    - **(5)** confirmed it had a well-established OSMP.
    - **(6)** confirmed it had considered the cumulative impact on water quality from all operational discharges associated with the activity.

- (7) noted WAFIC had no other comments on the activity at this stage.

- **(7)** On 1 August 2024, WAFIC emailed Woodside to confirm it has no further comments on the proposed activities (SI Report, reference 13.7).

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*
(1) Consultation material delivered to relevant fisheries.	**(1)** **Woodside assessment:** Woodside noted that consultation information had been distributed to relevant fishery licence holders via WAFIC. **Woodside response:** Woodside thanked WAFIC for distributing consultation information to relevant fishery licence holders and noted there was no feedback or concerns from industry.	**(1)** Not required.
(2) Ongoing communication with mariners.	**(2)** **Woodside assessment:** Woodside will provide WAFIC with notifications regarding activities and vessel movements. **Woodside response:** Woodside confirmed it would keep WAFIC updated in relation to activities and vessel movements.	**(2)** Woodside will provide notifications to WAFIC as set out in Section 7.10 of the EP.
(3) WAFIC as contact in the OSPRMA.	**(3)** **Woodside assessment:** The OSPRMA references commercial fisheries to receive notifications in the event of an unplanned event. **Woodside response:** Woodside confirmed it would, at the relevant time, engage with relevant persons or organisations as appropriate and in alignment with the OSPRMA.	**(3)** Refer to Appendix D.
(4) Retain a list of WA commercial fisheries.	**(4)** **Woodside assessment:** Woodside maintains a list of WA commercial fisheries that have a potential for interaction within the PAA and the EMBA. **Woodside response:** Woodside confirmed it maintained a list of WA commercial fisheries that had a potential for interaction within the PAA and the EMBA.	**(4)** Not required.
(5)	**(5)**	**(5)**

Have a suitable OSMP in place.	**Woodside assessment:** Woodside has a well established OSMP and is a founding member of the iOSMP. **Woodside response:** Woodside confirmed it had an OSMP in place.	Refer to Appendix D.
(6) Consider cumulative impacts of decreased water quality.	**(6)** **Woodside assessment:** Section 6 of the EP covers the assessment. **Woodside response:** Woodside confirmed it considered the cumulative impacts of decreased water quality in the EP.	**(6)** Refer to Section 6 of the EP.
(7) No further comments.	**(7)** **Woodside assessment:** Woodside accepts that WAFIC has no other feedback on the proposed activity. **Woodside response:** Woodside noted WAFIC had no further comments on the proposed activity at this stage.	**(7)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside has assessed the potential for interaction with State-managed fisheries in Section 4.10 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to WAFIC on 19 June 2024 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 WAFIC over a 2 month period.

4.5.2 Mackerel Managed Fishery (Area 2)

Summary of information provided and record of consultation for this EP:

- On 31 June 2024, WAFIC, on behalf of Woodside, emailed Mackerel Managed Fishery (Area 2) individual licence holders advising of the proposed activity (SI Report, reference 13.2), and provided a Consultation Information Sheet.
- On 19 July 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.5).

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*
No feedback, 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 7.2.5 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Mackerel Managed Fishery (Area 2), via WAFIC, on 21 June 2024 based on their functions, interests or activities.
- Woodside has provided Mackerel Managed Fishery (Area 2), via WAFIC, with the opportunity to provide feedback over a 2 month period.

4.5.3 Marine Aquarium Managed Fishery

Summary of information provided and record of consultation for this EP:

- On 31 June 2024, WAFIC, on behalf of Woodside, emailed Marine Aquarium Managed Fishery individual licence holders advising of the proposed activity (SI Report, reference 13.2), and provided a Consultation Information Sheet.
- On 19 July 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.5).

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*

No feedback, 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 7.2.5 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Marine Aquarium Managed Fishery, via WAFIC, on 21 June 2024 based on their functions, interests or activities. • Woodside has provided Mackerel Marine Aquarium Managed Fishery, via WAFIC, with the opportunity to provide feedback over a 2 month period.		

4.5.4 Onslow Prawn Managed Fishery

Summary of information provided and record of consultation for this EP:

- On 31 June 2024, WAFIC, on behalf of Woodside, emailed Onslow Prawn Managed Fishery individual licence holders advising of the proposed activity (SI Report, reference 13.2), and provided a Consultation Information Sheet.
- On 19 July 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.5).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
No feedback, 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 7.2.5 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 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 Friday 14 June 2024.		

- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Onslow Prawn Managed Fishery, via WAFIC, on 21 June 2024 based on their functions, interests or activities.
- Woodside has provided Onslow Prawn Managed Fishery, via WAFIC, with the opportunity to provide feedback over a 2 month period.

4.5.5 Pilbara Crab Managed Fishery

Summary of information provided and record of consultation for this EP:

- On 31 June 2024, WAFIC, on behalf of Woodside, emailed Pilbara Crab Managed Fishery individual licence holders advising of the proposed activity (SI Report, reference 13.2), and provided a Consultation Information Sheet.
- On 19 July 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.5).

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*
No feedback, 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 7.2.5 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 Crab 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Pilbara Crab Managed Fishery, via WAFIC, on 21 June 2024 based on their functions, interests or activities.
- Woodside has provided Pilbara Crab Managed Fishery, via WAFIC, with the opportunity to provide feedback over a 2 month period.

4.5.6 Pilbara Line Fishery

Summary of information provided and record of consultation for this EP:

• On 31 June 2024, WAFIC, on behalf of Woodside, emailed Pilbara Line Managed Fishery individual licence holders advising of the proposed activity (SI Report, reference 13.2), and provided a Consultation Information Sheet. • On 19 July 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.5).		
Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
No feedback, 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 7.2.5 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 Line 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Pilbara Line Managed Fishery, via WAFIC, on 21 June 2024 based on their functions, interests or activities. • Woodside has provided Pilbara Line Managed Fishery, via WAFIC, with the opportunity to provide feedback over a 2 month period.		

4.5.7 Pilbara Trap Fishery

Summary of information provided and record of consultation for this EP: • On 31 June 2024, WAFIC, on behalf of Woodside, emailed Pilbara Trap Managed Fishery individual licence holders advising of the proposed activity (SI Report, reference 13.2), and provided a Consultation Information Sheet. • On 19 July 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.5).		
Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
No feedback, objections or claims received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of	No additional measures or controls are required.

	Change and Revision process (see section 7.2.5 of this EP).	

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Pilbara Trap 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Pilbara Trap Managed Fishery, via WAFIC, on 21 June 2024 based on their functions, interests or activities.
- Woodside has provided Pilbara Trap Managed Fishery, via WAFIC, with the opportunity to provide feedback over a 2 month period.

4.5.8 Pilbara Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 31 June 2024, WAFIC, on behalf of Woodside, emailed Pilbara Trawl Managed Fishery individual licence holders advising of the proposed activity (SI Report, reference 13.2), and provided a Consultation Information Sheet.
- On 19 July 2024, WAFIC emailed Woodside reporting that no feedback had been received for this activity from licence holders (SI Report, reference 13.5).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
No feedback, 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 7.2.5 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 Trawl 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Pilbara Trawl Managed Fishery, via WAFIC, on 21 June 2024 based on their functions, interests or activities.
- Woodside has provided Pilbara Trawl Managed Fishery, via WAFIC, with the opportunity to provide feedback over a 2 month period.

4.6 RECREATIONAL MARINE USERS AND REPRESENTATIVE BODIES

4.6.1 Gascoyne Recreational Marine Users

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside sent a letter to individual Gascoyne Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.2.13), provided a Consultation Information Sheet, and a QR code to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 18 June 2024, Woodside emailed individual Gascoyne Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.2.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 11 July 2024, Woodside sent a follow up to individual Gascoyne Recreational Marine Users (SI Report, reference 6.2.50).

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers 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 Gascoyne Recreational Marine Users on 18 June 2024 based on their functions, interests or activities.
- Woodside has provided Gascoyne Recreational Marine Users with the opportunity to provide feedback over a 2 month period.

4.6.2 Marine Tourism WA

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Marine Tourism WA advising of the proposed activity (Record of Consultation, reference 6.2.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Marine Tourism WA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Marine Tourism WA on 18 June 2024 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 WA with the opportunity to provide feedback over a 2 month period.

4.6.3 Pilbara/Kimberley Recreational Marine Users

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside sent a letter to individual Pilbara/Kimberley Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.2.13), provided a Consultation Information Sheet, and a QR code to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 18 June 2024, Woodside emailed individual Pilbara/Kimberley Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.2.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure Consultation on offshore petroleum environment plans: Information for the community.
- On 11 July 2024, Woodside sent a follow up to individual Pilbara/Kimberley Recreational Marine Users (SI Report, reference 6.2.50).

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 7.2.5 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/Kimberley 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers 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 Pilbara/Kimberley Recreational Marine Users on 18 June 2024 based on their functions, interests or activities.
- Woodside has provided Pilbara/Kimberley Recreational Marine Users with the opportunity to provide feedback over a 2 month period.

4.6.4 Lombadina Aboriginal Corporation

Lombadina Aboriginal Corporation have been identified as a relevant person through their functions, activities or interests as a Pilbara/Kimberley Recreational Marine User, as identified in Table 1. Lombadina Aboriginal Corporation is not a Prescribed Body Corporate under the *Native Title Act 1993* and associated regulations.

Historical engagement:

- On 25 July 2023, Woodside emailed Lombadina Aboriginal Corporation (Lombadina) NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information about certain activities and requested that Lombadina advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 43.1). No response was received to this email.

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Lombadina advising of the proposed activity (Record of Consultation, reference 6.2.48), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that Lombadina and its members may have within the EMBA, information on how Lombadina would like to engage, and requested that Lombadina provide information to other individuals as required.
- On 5 July 2024, Woodside emailed Lombadina a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference,43.2). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with Lombadina on future opportunities to work together.

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 7.2.5 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 Environmental Regulations and consultation with Lombadina 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 Lombadina's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside subject matters experts reviewed the activity's Consultation Information Sheet and Summary Information Sheet, which were provided to Lombadina. These documents 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.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that Lombadina can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with Lombadina in June 2024. Woodside has addressed and responded to Lombadina over 2 months, demonstrating a "reasonable period" of consultation.

Woodside asked Lombadina if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Lombadina's functions, interests, or activities.

4.6.5 Recfishwest

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Recfishwest advising of the proposed activity (Record of Consultation, reference 6.2.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 28 June 2024, Recfishwest emailed Woodside (SI Report, reference 9.1) and:
  - **(3)** noted some structures may be suitable as artificial reefs.
  - **(2)** advised it had no concerns.
  - **(1)** advised it would like to be kept informed as operations continue.
- **(1,2,3)** On 25 June 2024, Woodside thanked Recfishwest for its feedback, confirmed it will keep Recfishwest informed and advised decommissioning activities will be the subject of another EP (SI Report, reference 9.2).

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 operations continue.	**(1)** **Woodside assessment:** Woodside acknowledges Recfishwest's request to be informed as operations continue. **Woodside response**: Woodside confirmed it would keep Recfishwest informed as operations continue.	**(1)** Woodside will provide notifications to Recfishwest as set out in Section 7.10 of the EP.
(2) Recfishwest confirmed having no concerns for this activity.	**(2)** **Woodside assessment:** Woodside noted Recfishwest has no concerns regarding this activity. **Woodside response:** Woodside thanked Recfishwest for its feedback.	**(2)** Not required.
(3) Consider some structures as artificial reefs.	**(3)** **Woodside assessment:** Woodside noted Recfishwest's position on the potential for structures to become artificial reefs. **Woodside response:** Woodside advised decommissioning activities would be the subject of a future EP.	**(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	Woodside considers the measures and controls in the EP are appropriate.

	further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	

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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Recfishwest on 18 June 2024 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 2 month period.

4.6.6 WA Game Fishing Association

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed WA Game Fishing Association advising of the proposed activity (Record of Consultation, reference 6.2.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to WA Game Fishing Association, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 WA Game Fishing Association 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to WA Game Fishing Association on 18 June 2024 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 WA Game Fishing Association with the opportunity to provide feedback over a 2 month period.

4.7 TITLEHOLDERS AND OPERATORS

4.7.1 Beagle No.1

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Beagle No.1 advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Beagle No.1, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Beagle No.1 for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.4 of the EP. Specifically:

- Consultation Information Sheet publicly available on the Woodside website since Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Beagle No.1 on 18 June 2024 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 Beagle No.1 with the opportunity to provide feedback over a 2 month period.

4.7.2 Bounty Oil and Gas

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Bounty Oil and Gas advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Bounty Oil and Gas, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Bounty Oil and 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Bounty Oil and Gas on 18 June 2024 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 Bounty Oil and Gas with the opportunity to provide feedback over a 2 month period.

4.7.3 BP Developments Australia

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed BP Developments Australia advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to BP Developments Australia, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- **(1)** On 15 July 2024, BP Developments Australia emailed Woodside and confirmed it had no objections (SI Report, reference 49.1).
- **(1)** On 22 July 2024, Woodside thanked BP Developments Australia for its feedback (SI Report, reference 49.2).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) No objections.	**(1)** **Woodside assessment:** Woodside noted BP's feedback. **Woodside response:** Woodside thanked BP for confirming it had no feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with BP Developments 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to BP Developments Australia on 18 June 2024 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 BP Developments Australia over a 2 month period.

4.7.4 Carnarvon Energy

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Carnarvon Energy advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- **(1)** On 21 June 2024, Carnarvon Energy emailed Woodside and confirmed it had no feedback on the EP (SI Report, reference 2.1).
- **(1)** On 25 June 2024, Woodside thanked Carnarvon Energy for its feedback (SI Report, 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***
(1) No feedback for this EP.	**(1)** **Woodside assessment:** Woodside noted Carnarvon Energy's feedback. **Woodside response:** Woodside thanked Carnarvon Energy for confirming it had no feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.

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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Carnarvon Energy on 18 June 2024 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 Carnarvon Energy over a 2 month period.

4.7.5 Chevron Australia/ Osaka Gas Gorgon/ MidOcean Gorgon/ JERA Gorgon

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Chevron advising of the proposed activity (Record of Consultation, reference 6.2.19), provided a Consultation Information Sheet, GIS shape files and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* Woodside asked that the consultation information be forwarded to Chevron's Joint Venture participants Osaka Gas Gorgon, MidOcean Gorgon and Jera Gorgon for feedback.
- On 11 July 2024, Woodside sent an email reminder to Chevron, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Chevron on 19 June 2024 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 with the opportunity to provide feedback over a 2 month period.

4.7.6 Coastal Oil and Gas / Fox Resources

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Coastal Oil and Gas advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Coastal Oil and Gas, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Coastal Oil and 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Coastal Oil and Gas on 18 June 2024 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 Coastal Oil and Gas with the opportunity to provide feedback over a 2 month period.		

4.7.7 Eni Australia

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Eni Australia advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- **(1)** On 18 June 2024, Eni Australia emailed Woodside to advise it had no concerns regarding the activity and **(2)** requested to be updated of any material changes (SI Report, reference 6.1).
- **(1,2)** On 25 June 2024, Woodside thanked Eni Australia for its feedback and confirmed it would provide Eni Australia with significant updates with respect to the proposed activities when relevant (SI Report, reference 6.2).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) No concerns regarding the activity.	**(1)** **Woodside assessment:** Woodside noted Eni Australia has no concerns regarding this activity. **Woodside response:** Woodside thanked Eni Australia for its feedback.	**(1)** Not required.

(2) Requested to be updated of any material changes.	**(2)** **Woodside assessment:** Woodside will provide notifications to Eni and relevant stakeholders as outlined in Table 7-7 of this EP. **Woodside response:** Woodside confirmed it would contact Eni Australia with activity updates when relevant.	**(2)** Woodside will provide notification of significant change, as appropriate, to Eni Australia, as referenced in Table 7-8 of the EP.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.
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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Eni Australia on 18 June 2024 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 Eni Australia over a 2 month period.		

4.7.8 Exxon Mobil Australia Resources Company

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed Exxon Mobil Australia Resources Company advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 11 July 2024, Woodside sent an email reminder to Exxon Mobil Australia Resources Company, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 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 Exxon Mobil Australia Resources Company 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Exxon Mobil Australia Resources Company on 18 June 2024 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 Resources Company with the opportunity to provide feedback over a 2 month period.

4.7.9 Finder Energy

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Finder Energy advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- **(1)** On 18 June 2024, Finder Energy emailed Woodside to advise it has no comment or objections to the planned activities (SI Report, reference 7.1).
- **(1,2)** On 25 June 2024, Woodside thanked Finder Energy for its feedback (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) No comments or objections to the planned activities.	**(1)** **Woodside assessment:** Woodside noted Finder Energy had no comment or objections to the planned activities. **Woodside response:** Woodside thanked Finder Energy for its feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should	Woodside considers the measures and controls in the EP are appropriate.

	further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Finder 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Finder Energy on 18 June 2024 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 Finder Energy over a 2 month period.

4.7.10 INPEX Alpha

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed INPEX advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to INPEX, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to INPEX on 18 June 2024 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 2 month period.

4.7.11 Jadestone

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Jadestone advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Jadestone, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Jadestone 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Jadestone on 18 June 2024 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 Jadestone with the opportunity to provide feedback over a 2 month period.

4.7.12 JX Nippon O&G Exploration (Australia)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed JX Nippon O&G Exploration (Australia) advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to JX Nippon O&G Exploration (Australia), following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 JX Nippon O&G Exploration (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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to JX Nippon O&G Exploration (Australia) on 18 June 2024 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 JX Nippon O&G Exploration (Australia) with the opportunity to provide feedback over a 2 month period.

4.7.13 KATO Energy / KATO Corowa/ KATO NWS / KATO Amulet

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed KATO advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to KATO, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 KATO 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to KATO on 18 June 2024 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 with the opportunity to provide feedback over a 2 month period.

4.7.14 KUFPEC

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed KUFPEC advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to KUFPEC, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- **(1)** On 9 August 2024, KUFPEC emailed Woodside and confirmed it had no objections (SI Report, reference 56.1).
- **(1)** On 13 August 2024, Woodside thanked KUFPEC for its feedback (SI Report, reference 56.2).

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*
(1) No objections.	**(1)** **Woodside assessment:** Woodside noted KUFPEC's feedback. **Woodside response:** Woodside thanked KUFPEC for confirming it had no feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.
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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to KUFPEC on 18 June 2024 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 addressed and responded to KUFPEC over a 2 month period.		

4.7.15 Kyushu Electric Wheatstone

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Kyushu Electric Wheatstone advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Kyushu Electric Wheatstone, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Kyushu Electric Wheatstone 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Kyushu Electric Wheatstone on 18 June 2024 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 Kyushu Electric Wheatstone with the opportunity to provide feedback over a 2 month period.

4.7.16 OMV Australia / Sapura OMV Upstream

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed OMV advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to OMV, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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	No additional measures or controls are required.

	Change and Revision process (see section 7.2.5 of this EP).	

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with OMV 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to OMV on 18 June 2024 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 with the opportunity to provide feedback over a 2 month period.

4.7.17 PE Wheatstone

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed PE Wheatstone advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to PE Wheatstone, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 PE Wheatstone 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 Friday 14 June 2024.

- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to PE Wheatstone on 18 June 2024 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 PE Wheatstone with the opportunity to provide feedback over a 2 month period.

4.7.18 Santos NA Energy Holdings / Santos Ltd / Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Santos advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Santos, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- **(1)** On 1 August 2024, Santos emailed Woodside to advise it has no feedback regarding this activity (SI Report, reference 53.1).
- **(1)** On 1 August 2024, Woodside thanked Santos for its feedback (SI Report, reference 53.2).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) No feedback regarding the activity.	**(1)** **Woodside assessment:** Woodside noted Santos has no feedback regarding the activities. **Woodside response:** Woodside thanked Santos for its feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.
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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Santos on 18 June 2024 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 addressed and responded to Santos over a 2 month period.

4.7.19 Shell Australia

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Shell advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Shell, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Shell 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shell on 18 June 2024 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 with the opportunity to provide feedback over a 2 month period.

4.7.20 Vermilion Oil & Gas

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Vermilion Oil & Gas advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Vermilion Oil & Gas, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Vermilion Oil & 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Vermilion Oil & Gas on 18 June 2024 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 Vermilion Oil & Gas with the opportunity to provide feedback over a 2 month period.

4.7.21 Western Gas

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Western Gas advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Western Gas, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Western Gas on 18 June 2024 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 2 month period.

4.8 PEAK INDUSTRY REPRESENTATIVE BODIES

4.8.1 Australian Energy Producers (AEP)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed AEP advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to AEP, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to AEP on 18 June 2024 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 2 month period.

4.9 TRADITIONAL CUSTODIANS AND NOMINATED REPRESENTATIVE CORPORATIONS

4.9.1 Balanggarra Aboriginal Corporation

Balanggarra Aboriginal Corporation (BAC) is established under the *Native Title Act 1993* by the Balanggarra People to represent the Balanggarra People (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 18 July 2023, Woodside emailed BAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside encourages BAC to advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 14.1).
- On 13 March 2024, Woodside emailed BAC requesting an opportunity to meet and discuss Woodside's energy activities and to answer any questions and hear feedback from interested members (SI Report, reference 14.2). No response was received.

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed BAC advising of the proposed activity (Record of Consultation, reference 6.2.20), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted

information. The email requested information on the interests that BAC and its members may have within the EMBA, information on how BAC would like to engage, and requested that BAC provide information to other individuals as required.

- On 19 June 2024, Woodside emailed BAC a follow-up about the proposed activity, which included a Summary Information Sheet and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information, as per the 18 June 2024 email (SI Report, reference 14.3).
- On 5 July 2024, Woodside emailed BAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details and a closing date to submit feedback about the proposed activity (SI Report, reference 14.4). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with BAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 7.2.5 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 Environmental Regulations and consultation with BAC 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 BAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that BAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with BAC in June 2024. Woodside has addressed and responded to BAC over 2 months, demonstrating a "reasonable period" of consultation.

Woodside asked BAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on BAC's functions, interests, or activities.

4.9.2 Bardi and Jawi Niimidiman Aboriginal Corporation

Bardi and Jawi Niimidiman Aboriginal Corporation (BJNAC) is established under the *Native Title Act 1993* by the Bardi and Jawi People to represent the Bardi and Jawi people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 14 April 2023, BJNAC emailed Woodside (SI Report, reference 15.1). In the email BJNAC:
  - **(1)** Stated it needed a resourcing protocol to allow it to assist Woodside and would provide this within 28 days.
  - Objected to Woodside progressing matters or making a submission to NOPSEMA in the meantime.
- **(1)** On 5 June 2023, BJNAC emailed Woodside a draft resourcing protocol agreement for consideration and stated it would await comments from Woodside (SI Report, reference 15.2).
- **(1)** On 18 July 2023, Woodside emailed BJNAC thanking it for the draft protocol and restated Woodside's objectives for consultation. In the email, Woodside included a summary sheet for another activity along with NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that BJNAC advise Woodside of any other Traditional Custodian groups or individuals with whom BJNAC believes Woodside should consult (SI Report, reference 15.3).
- On 8 August 2023, NOPSEMA emailed Woodside (SI Report, reference 15.4) and enclosed a letter from three PBCs relating to among other things:
  - Culturally appropriate consultation processes.
  - Information that will support free, prior and informed consent.
  - **(2)** Financial support to bring together the right people to ensure appropriate consultations.
- **(2)** On 13 October 2023, Woodside met face-to-face with BJNAC to discuss implementing an engagement framework. A draft framework was reviewed and edits proposed. It was agreed that both parties were aligned for ongoing consultation. BJNAC commented positively on Woodside's approach to engaging and consulting with First Nations peoples. Woodside discussed methods of consultation, including the use of animated videos (SI Report, reference 15.5).
- **(2)** On 14 December 2023, Woodside emailed BJNAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 15.6). Woodside noted that it had not settled the Agreement Protocol internally but noted the following inclusions:
  - Agreement between Woodside and BJNAC and as representatives of the Bardi Jawi people (together "BJNAC") to consult in a meaningful and genuine manner,
  - The basic procedure Woodside will follow when a submission requires consultation – notification and invitation to meet,
  - Initial and ongoing consultation in relation to activities,
  - Agreement as to how Woodside will provide BJNAC the information BJNAC requires to make free, prior and informed decisions,
  - Agreement as to how BJNAC will provide feedback and how we can best represent BJNAC's feedback in our submissions,
  - **(1)** An agreed schedule of rates,

- How the outputs of the consultation are managed.

- **(2)** On 28 February 2024, Woodside emailed BJNAC with a letter (SI Report, reference 15.7) setting out the draft terms of a consultation agreement between BJNAC and Woodside, the agreement (among other things) included the following topics:
  - Sufficient Information,
  - Reasonable Period,
  - Provision of Information,
  - Objection or claims,
  - Publication,
  - **(1)** Arrangements regarding reasonable costs and expenses,
  - How the agreement may be terminated.
- **(2)** On 4 April 2024, Woodside emailed BJNAC enquiring if BJNAC had reviewed the draft consultation agreement sent on 28 February 2024 and asked if there was anything Woodside could do to support (SI Report, reference 15.8).
- **(2)** On 15 April 2024, BJNAC emailed Woodside advising it would respond to the draft consultation agreement by the end of the week (SI Report, reference 15.9).
- **(2)** On 23 April 2024, Woodside telephoned BJNAC to confirm an earlier arranged meeting with the BJNAC Board on 2 May 2024. BJNAC informed Woodside that it would be unable to meet the BJNAC board until the consultation agreement was finalised (SI Report, reference 15.10).
- **(1,2)** On 3 May 2024, BJNAC emailed Woodside a draft protocol which included a Schedule of Rates and Consultation Schedule (SI Report, reference 15.11).
- **(1,2)** On 3 May 2024, Woodside and BJNAC communicated by phone after receiving the email on the same day. Included in the discussion was reference to the consultation framework agreement. Woodside noted that it would review BJNAC's comments and feedback, and reply in due course (SI Report, reference 15.12).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed BJNAC advising of the proposed activity (Record of Consultation, reference 6.2.21), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that BJNAC and its members may have within the EMBA, information on how BJNAC would like to engage, and requested that BJNAC provide information to other individuals as required.
- On 5 July 2024, Woodside emailed BAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details and a closing date to submit feedback about the proposed activity (SI Report, reference 15.13). Woodside also advised that it would be available to meet face-to-face to discuss the activity. No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with BJNAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1) BJNAC has requested that Woodside enter into a resourcing protocol. BJNAC has set out conditions it requires for ongoing engagement.	**(1)** **Woodside assessment**: Woodside supports reasonable requests for funding to aid consultation activities.	**(1)** As identified in Sections 6 and 7 of this EP, Woodside will continue to consult following acceptance of the EP, as required by the implementation strategy as set out in

	Woodside response: Woodside is committed to resourcing BJNAC through an agreed resourcing protocol as part of ongoing consultation as required by the implementation strategy as set out regulation 22(15) of the Environment Regulations.	regulation 22(15) 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).
(2) BJNAC supports implementing an engagement framework. The framework would include preferred methods of consultation	**(2)** **Woodside assessment**: Woodside is committed to culturally appropriate consultation processes. **Woodside response**: Woodside provided BJNAC with a draft consultation agreement in February 2024. The agreement would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members.	**(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).
Woodside addressed objections and claims as noted above.	Woodside engages in ongoing consultation 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 7.2.5 of the EP).	No additional controls or measures required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with BJNAC 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 BJNAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that BJNAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback...

- Woodside commenced consultation with BJNAC in June 2024. Woodside has addressed and responded to BJNAC over 2 months, demonstrating a “reasonable period” of consultation.

Woodside asked BJNAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on BJNAC’s functions, interests, or activities.

4.9.3 Buurabalayji Thalanyji Aboriginal Corporation

Buurabalayji Thalanyji Aboriginal Corporation (BTAC) is established under the *Native Title Act 1993* by the Thalanyji people to represent the Thalanyji people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 20 February 2023, BTAC emailed Woodside a letter in relation to another project but relevant to all Woodside activities, including the footprint of this activity (SI Report, reference 16.1). BTAC stated that the Thalanyji people:
  - **(1)** Had interests extending out to islands off the Pilbara coast such as the Montebello Islands, Barrow Island and the Mackerel Islands.
  - **(2)** Had an enduring deep connection to Sea Country north of Onslow but needed support to articulate this in a format suitable for consultation.
  - **(3)** Required support from Woodside to obtain technical advice about risks to Sea Country.
  - **(4)** Requested Woodside support BTAC’s ranger program to carry out response planning and management activities.
  - **(5)** Required a consultation or engagement framework with Woodside that included resourcing for BTAC’s participation in consultation and management planning processes.
- On 19 June 2023, BTAC emailed Woodside on another activity and discussed draft consultation framework principles and consultation rates (SI Report, reference 16.2).
- **(5)** On 10 July 2023, Woodside emailed BTAC acknowledging that Woodside commits to a program of ongoing consultation and will be governed by a framework agreement (SI Report, reference 16.3).
- **(5)** On 26 July 2023, Woodside emailed BTAC Woodside’s planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 16.4).
- On 28 July 2023, Woodside and BTAC met virtually. The outcomes of this meeting were captured in an email (SI Report, reference 16.5). Matters included:
  - **(5)** Woodside’s agreement to prepare a draft framework agreement for BTAC’s consideration.
  - **(5)** Funding for future engagement.
  - **(2)** Cultural values mapping of offshore areas and capacity building.
- On 31 July 2023, Woodside emailed three letters to BTAC, two of which related to other Woodside activities (SI Report, reference 16.6). The third letter outlined support for an ethnographic assessment to:
  - **(2)** Identify Sea Country values generally sufficient to inform all Woodside EP’s.
  - **(1)** Support any work necessary to clarify or define the offshore areas that are relevant to the Thalanyji People.

  - Propose the delivery of interim reports if this will enable prioritising matters considered most critical by BTAC.
  - **(2)** Confirm Woodside will be responsible for all reasonable costs to complete the assessment.
  - Confirm BTAC retains intellectual property over any resulting report or other materials, but Woodside will retain a right to use the content of any non-culturally sensitive report or other materials for the purposes of project approvals and planning.
- **(5)** On 14 September 2023, BTAC emailed two letters to Woodside (SI Report, reference 16.7):
  - Support for ongoing engagement and consultation for Environment Plan through a consultation agreement.
  - Cost recovery to assist consultation for NOPSEMA-related matters. **(5)** Woodside replied, acknowledging receipt of the letter.
- **(5)** On 20 September 2023, BTAC emailed Woodside twice, requesting a response from Woodside to its letter of 14 September 2023 and seeking an update on the status of the consultation agreement (SI Report, reference 16.8 – 16.9).
- **(5)** On 22 September 2023, Woodside emailed BTAC a signed copy of BTAC's costs recovery letter, the list of activities for which Woodside has consulted BTAC and advised that the draft consultation agreement was under review (SI Report, reference 16.10).
- **(5)** On 26 September 2023, BTAC responded to Woodside's email of 22 September 2023 and confirmed BTAC would be assisted by a legal representative (SI Report, reference 16.11).
- **(5)** On 13 October 2023, BTAC's legal representative emailed Woodside and, among other things, advised BTAC requests Woodside provide a proposed consultation agreement for discussion with both YAC and BTAC that includes an indemnity and hold harmless clause for the benefit of BTAC and YAC regarding any exposure to legal costs or other liability under a court ruling as a result of any consultation they engage in with Woodside (SI Report, reference 16.12).
- **(5)** On 2 November 2023, Woodside emailed BTAC's legal representative noting it would not agree to include the requested indemnity provision in the consultation agreement however noted Woodside would still like to progress the consultation agreement and map BTAC's Sea Country values (SI Report, reference 16.13).
- **(5)** On 18 November 2023, in response to requests from BTAC's legal representative, Woodside provided further information about its response to BTAC's indemnification request. Among other things, Woodside explained that it could be a detriment to genuine agreement and mean Woodside could not rely on genuine efforts at consultation of the purposes of approvals. Woodside again noted its commitment to build an ongoing relationship with BTAC (SI Report, reference 16.14).
- On 27 November 2023, Woodside attended and presented to the BTAC Common Law Holders meeting (SI Report, reference 16.15). Matters discussed included:
  - **(2)** Woodside's offer to fund Sea Country mapping, which BTAC had yet to take up.
  - **(5)** Progress of a consultation agreement between BTAC and Woodside.
- On 7 December 2023, Woodside emailed BTAC and attached correspondence sent previously to BTAC (SI Report, reference16.16). The correspondence included information about:
  - **(2)** Woodside's support for articulating and understanding Sea Country values, including ethnographic/anthropological mapping.
  - **(4)** Woodside's commitment to engage in ongoing consultation for the purpose of ongoing monitoring, management and emergency response.
  - **(3)** Woodside's support for BTAC to obtain independent environmental management advice.
  - **(1)** Information about BTAC's interest in archaeological sites on nearshore islands including the Montebello and Barrow Islands.
- **(2, 3)** On 7 December 2023, BTAC emailed Woodside accepting the offer to take up Sea Country mapping and research. BTAC requested a meeting in the week of 15 January 2024 to plan for upcoming activities (SI Report, reference 16.17).
- Between 8 - 11 December 2023, Woodside exchanged emails about financial matters relating to the consultation agreement. Woodside noted it required itemised estimates for services (SI Report, references 16.18 – 16.20).

- On 17 January 2024, Woodside met with BTAC (SI Report, reference 16.21) and discussed (among other things):
  - **(2)** Sea Country mapping.
  - BTAC's preference for early notice on EPs.
  - **(4)** BTAC's interest in employment/training opportunities and opportunities for rangers.
  - BTAC to form a committee for consultation on EPs.
- **(4)** 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 16.22).
- **(2)** On 8 February 2024, Woodside emailed BTAC following up on a quote for Woodside to support BTAC articulating Sea Country values (SI Report, reference 16.23).
- **(5)** On 8 February 2024, BTAC emailed Woodside noting that it had a consultant generating a scope of work for articulating Sea Country values which will allow BTAC to understand costings (SI Report, reference 16.24).
- On 8 February 2024, Woodside emailed BTAC acknowledging its response (SI Report, reference 16.25).
- **(5)** On 28 February 2024, Woodside emailed BTAC a letter setting out the draft terms of a consultation agreement between BTAC and Woodside (SI Report, reference 16.26). The agreement (among other things) included the following topics:
  - Sufficient Information
  - Reasonable Period
  - Provision of Information
  - Objection or claims
  - Publications
  - Cost and termination.
- On 28 February 2024, BTAC's legal representative emailed Woodside querying whether Woodside did not propose to cover the costs of BTAC obtaining legal advice to engage with Woodside (SI Report, reference 16.27).
- **(5)** On 28 February 2024, Woodside emailed BTAC's legal representative, noting that BTAC had been seeking a draft Framework Agreement from Woodside, apologising for the delay in providing the draft to BTAC, and that the rate for engagement could be set out in the agreement. In relation to legal advice, Woodside re-iterated that a cost estimate was required and noted that the legal representative's refusal to provide an estimate could be interfering with progressing matters with BTAC (SI Report, reference 16.28).
- On 22 May 2024, Woodside and BTAC met (SI Report, reference 16.29) and discussed matters including:
  - Other Woodside activities and related EPs,
  - **(3)** **(3)** and the need for technical advice.
  - **(2)** Woodside's ongoing commitment to support BTAC articulate its Sea Country values. Woodside is awaiting BTAC's advice on its vision for this work.
  - **(4)** 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.
- **(4)** On 27 May 2024, Woodside and BTAC exchanged emails on training and employment opportunities, following the 22 May meeting (SI Report, references 16.30 – 16.32).
- **(2)** 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 16.33).
- **(4)** On 18 June 2024, Woodside emailed BTAC with a contact for employment opportunities (SI Report, reference 16.34).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed BTAC advising of the proposed activity (Record of Consultation, reference 2.22), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that BTAC and its members may have within the EMBA, information on how BTAC would like to engage, and requested that BTAC provide information to other individuals as required.
- **(2)** 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 16.35). The letter outlined:
  - A proposed cultural mapping program to translate cultural values associated with the Thalanyji Area of Interest and appropriately manage potential impacts to Sea 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.
- (2) 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 16.36).
- **(2)** On 5 July 2024, BTAC emailed Woodside to follow-up on its email/letter of 19 June 2024 (SI Report, reference 16.37).
- (2) 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 16.38).
- On 5 July 2024, Woodside emailed BTAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 16.39). No response has been received.
- **(2)** On 23 July 2024, BTAC emailed Woodside acknowledging that Woodside would be responding to its mapping project proposal by the end of July 2024 (SI Report, reference 16.40).
- (2) On 31 July 2024, Woodside emailed BTAC acknowledging and thanking BTAC for submitting its Thalanyji Cultural Mapping Project proposal (SI Report, reference 16.41). Woodside stated:
  - The proposed cultural mapping project addresses the whole of Thalanyji country including onshore and offshore areas, and areas extending into an adjacent Native Title determination area, and as such, the scope is broader than Woodside had expected and that can be supported.
  - As communicated in 2023, Woodside's expectation is that an ethnographic assessment, focused on clarifying or defining the offshore areas that are relevant to the Thalanyji people and recording Sea Country values, can effectively inform EPs.
  - Woodside supports engaging of an anthropologist, agreed by the parties, for the purpose of an ethnographic assessment, and will consider further phases upon completion of the first agreement.
  - Woodside seeks an opportunity to develop a brief for the initial agreement with BTAC.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with BTAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1)	**(1)**	**(1)**

BTAC stated that its interests include archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Mackerel Islands.	**Woodside assessment**: Given EMBAs may extend to nearshore areas coastally adjacent to the Thalanyji native title determination area, these values may be relevant in the event of an unplanned hydrocarbon release. Woodside will engage with Traditional Custodians whose interests may be affected in the event of a hydrocarbon release, as outlined in Appendix H. **Woodside response**: Woodside has sought to engage BTAC in further assessments of Sea Country values. BTAC has not provided further detail regarding heritage value of places or cultural features of the Operational Area or the EMBA.	Existing controls considered sufficient as described in Section 6.10 and Appendix H.
(2) BTAC has a cultural obligation to care for the environmental values of Sea Country but needs support to articulate these in a format suitable for consultation.	**(2)** **Woodside assessment**: Woodside assessed BTAC's cultural obligation to care for the environmental values of Sea Country to represent potential cultural values. **Woodside response**: Woodside updated relevant sections in the EP to record BTAC's interests and potential cultural values, assessed the potential impact on these and included controls.	**(2)** Woodside updated Section 4.9.4 to record BTAC's interests and potential cultural values and assessed potential impact on these, including controls, in Section 6.10.
(3) Requested Woodside supports BTAC in obtaining technical advice relating to proposed activities.	**(3)** **Woodside assessment**: In February 2024, BTAC engaged a consultant who is completing a scope of work to inform BTAC of costings for articulating Sea Country values (see (2) above). Woodside considers it beneficial for Thalanyji to have technical advice to ensure the delivery of an outcome that does justice to the work involved to record the Sea Country values. **Woodside response**: Woodside has offered financial support for technical advice and other support, which has been accepted. The draft Collaboration Agreement (see **(6)** below) includes technical support for recording of Sea Country values.	**(3)** Not required.
(4) Expressed desire to be involved in local emergency response capability, potentially via an Indigenous Ranger Program. Interested in opportunities for employment/training.	**(4)** **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**: Woodside has offered to support BTAC to engage in management and emergency response. In January 2024 Woodside provided BTAC with information about a training/employment program.	**(4)** The Program for Ongoing Engagement with Traditional Custodians (Appendix G) includes consideration of programs to support Indigenous Rangers, and support for Indigenous oil spill response capabilities.

(5) BTAC proposed a Consultation Agreement as an appropriate mechanism to provide ongoing feedback to Woodside regarding its activities. This would include cost recovery to assist consultation for NOPSEMA-related matters.	**(5)** **Woodside assessment:** This aligns with Woodside's Program of Ongoing Engagement with Traditional Custodians and will frame ongoing consultation processes. **Woodside response:** Separate from consultation under regulation 25 of the Environment Regulations, Woodside has drafted a consultation agreement between BTAC and Woodside. The agreement was sent to BTAC in February 2024. The agreement includes support for recording and articulation of Sea Country values. Woodside has signed a cost acceptance letter and has informed BTAC it will financially support consultation meetings. Information about costs is also contained in the draft consultation agreement.	**(5)** As identified in Section 7.10 of this EP, Woodside will continue to consult following acceptance of the EP, as required by the implementation strategy as set out in regulation 35(7) of the Environment Regulations. This includes continued engagement regarding the Collaboration Agreement that Woodside seeks with BTAC, a draft of which includes support for BTAC to define and articulate sea values, provision of ongoing feedback and cost recovery.
Woodside has addressed objections and claims as noted above.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with BTAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on BTAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that BTAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.

- Woodside commenced consultation with BTAC in June 2024. Woodside has addressed and responded to BTAC over two months, demonstrating a “reasonable period” of consultation.

Woodside asked BTAC 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 7.2.5 of the EP).

Woodside considers that the measures and controls described in this EP address the potential impact from the proposed activity on BTAC’s functions, interests, and activities.

4.9.4 Dambimangari Aboriginal Corporation

Dambimangari Aboriginal Corporation (DAC) established under the *Native Title Act 1993* by the Dambimangari people to represent the Dambimangari people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 8 November 2023, Woodside visited the DAC offices in Derby in person to meet and seek feedback on EPs. Woodside discussed the purpose of consultation and directed members to NOPSEMA’s public information regarding First Nations engagement. Woodside asked if DAC had any questions or would like to provide feedback and if there was anyone else they should they wish to make introductions. DAC advised of contact persons (SI Report, reference 17.1).
- **(1)** On 12 March 2024, DAC emailed Woodside to confirm Woodside meeting with DAC Board between 10 and 11 April 2024. DAC Board also requested Woodside provide full disclosure of any environmental issues or incidents, including from current operations in the region, and how Woodside manages these issues and incidents. DAC advised it would confirm agenda and meeting details (SI Report, reference 17.2).
- **(1)** On 10 April 2024, Woodside met with DAC to discuss other Woodside activities and EP consultation. Woodside reaffirmed that it would remain in contact about EPs (SI Report, reference 17.3).
- On 12 April 2024, Woodside emailed DAC with thanks for the opportunity to the meet the Board the previous day. Woodside followed up with information about two separate activities and related EPs, as well as reinforcing that Woodside is legally required to provide information about projects relevant to DAC, and appreciates and respects the busy schedules of members. Woodside reaffirmed its commitment to working with DAC and providing support as required (SI Report, reference 17.4).

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DAC advising of the proposed activity (Record of Consultation, reference 6.2.23), and provided a Summary Information Sheet (including a link to the detailed information sheet on Woodside’s website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that DAC and its members may have within the EMBA, information on how DAC would like to engage, and requested that DAC provide information to other individuals as required.
- On 5 July 2024, Woodside emailed DAC a reminder about the proposed activity, offered an opportunity to discuss the activity further and included a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 17.5). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with DAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1) DAC Board requested Woodside provide full disclosure of any environmental issues or incidents, including from current operations in the region, and how Woodside manages these issues and incidents.	**(1)** **Woodside assessment**: Woodside acknowledges the importance of providing information to Traditional Custodians in a timely manner. **Woodside response**: Woodside met with the DAC Board to provide information about EP consultations relating to other activities in the region and reaffirmed its commitment to continue engagement with DAC.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. 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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with DAC 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 DAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that DAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).
- This resulted in a face-to-face meeting being coordinated at the location of DAC's choosing, with nominated representatives. The meeting included Woodside presenting information in a format and style that was readily accessible and appropriate.

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.

- Woodside commenced consultation with DAC in June 2024. Woodside has addressed and responded to DAC over two months, demonstrating a “reasonable period” of consultation. Woodside asked BAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside asked DAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on DAC’s functions, interests, or activities.

4.9.5 Gogolanyngor Aboriginal Corporation

Gogolanyngor Aboriginal Corporation (GAC) is established under the *Native Title Act 1993* by the Jabirr Jabirr/Ngumbarl and Bindunbur people to represent the Jabirr Jabirr/Ngumbarl and Bindunbur people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 18 July 2023, Woodside emailed GAC NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that GAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, references 18.1).
- On 26 July 2023, Woodside emailed GAC Woodside’s planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 18.2).
- On 26 April 2024, Woodside attended the GAC Board meeting to discuss a number of Woodside activities and answer questions (SI Report, reference 18.3). GAC Board raised some general queries activities, to which Woodside responded at the meeting or indicated it would formally respond in due course including:
  - **(1)** Would there be employment and training opportunities like for previous Woodside activities?
- In response, Woodside stated at the meeting:
  - **(1)** Woodside explained there would be limited employment and training opportunities, however would consider any potential opportunities.
  - Woodside thanked the GAC Board for meeting and consulting on activities and EPs and indicated it would be in contact to provide responses to the questions raised.
- On 13 May 2024, Woodside emailed GAC responses to the questions raised at the 26 April 2024 meeting with the Board as follows (SI Report, reference 18.4):
  - In broad terms there is a potential for oil and gas well drilling to cause earthquakes however, the type of geology in the area of the specific activity discussed is not associated with earthquakes.
  - The well heads are primarily made of steel, and there are small volumes of residual chemicals that may be released over a very long time as the wellheads rust. They are located deep below the ocean.
  - Fracking is a type of oil and gas development where oil/gas is held tightly in rocks and released by injecting fluids to ‘fracture’ the rocks. For the specific activity discussed, the oil/gas will naturally flow through the wells to the FPSO without the need to fracture rocks.

Summary of information provided and record of consultation for this EP:

- On 16 June 2024, Woodside emailed GAC advising of the proposed activity (Record of Consultation, reference 6.2.24), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside’s website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that GAC and its members may have within the EMBA, information on how GAC would like to engage, and requested that GAC provide information to other individuals as required.

- On 5 July 2024, Woodside emailed GAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference, 18.5). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with GAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) GAC Board queried if there be employment and training opportunities like for previous Woodside activities.	**(1)** **Woodside assessment**: Woodside acknowledges that there have been employment and training opportunities, as per previous activities. **Woodside response**: Woodside informed the GAC Board there would be limited employment or training opportunities as a result of the specific activity discussed, however Woodside is open to considering opportunities.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. 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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with GAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on GAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that GAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

- This resulted in a face-to-face meeting being coordinated at the location of GAC's choosing, with nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate.

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with GAC in June 2024. Woodside has addressed and responded to GAC over two months, demonstrating a "reasonable period" of consultation. Woodside asked BAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside asked GAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on GAC's functions, interests, or activities.

4.9.6 Karajarri Traditional Lands Association (Aboriginal Corporation)

Karajarri Traditional Lands Association (KTLA) is established under the *Native Title Act 1993* by the Karajarri people to represent the Karajarri people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 24 July 2023, Woodside emailed KTLA NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that KTLA advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 19.1).
- On 26 July 2023, Woodside emailed KTLA Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 19.2).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Karajarri Traditional Lands Association (KTLA) advising of the proposed activity (Record of Consultation, reference 6.2.25), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that KTLA and its members may have within the EMBA, information on how KTLA would like to engage, and requested that KTLA provide information to other individuals as required.
- On 21 June 2024, Woodside emailed KTLA the original Record on Consultation, as per the 19 June 2024 email (SI Report, reference 19.3).
- On 5 July 2024, Woodside emailed KTLA a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 19.4). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with KTLA on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 (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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with KTLA for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on KTLA's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that KTLA can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with KTLA in June 2024. Woodside has addressed and responded to KTLA over two months, demonstrating a "reasonable period" of consultation. Woodside asked KTLA if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside asked KTLA if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on KTLA's functions, interests, or activities.

4.9.7 Kariyarra Aboriginal Corporation

Kariyarra Aboriginal Corporation (KAC) is established under the *Native Title Act 1993* by Kariyarra people to represent the Kariyarra people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 26 July 2023, Woodside emailed KAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 20.1).
- **(1)** On 31 August 2023, KAC (via legal representative) emailed Woodside (SI Report, reference 20.2) about an unrelated EP and indicated it required Woodside to meet costs for:
  - Engagement with KAC for consultation purposes
  - The preparation of an engagement protocol.
- **(1)** Between 10 and 13 September 2023, Woodside and KAC (via legal representative) exchanged emails (SI Report, references 20.3 – 20.6) in relation to consultation costs and advised that:
  - **(2)** Kariyarra has sea rights referenced in its native title evidence.
- On 28 September 2023, KAC's legal representative emailed Woodside and provided a single figure non-itemised quote (SI Report, reference 20.7). The email included a letter dated 22 September, referring to another activity more broadly setting out:
  - **(1)** Proposed negotiations for a consultation protocol and co-management agreement.
  - **(2)** Values and interests in Sea Country.
  - **(2)** Traditional fishing and gathering rights in the ocean.
  - **(3)** Presence of mythic snakes.
- **(1)** Between 20 – 26 October 2023, several emails were exchanged (SI Report, references 20.8 – 20.14) relating to costs. KAC's legal representative stated Woodside's proposed cost structure was inadequate and would confer with the EDO.
- On 14 November 2023, KAC's legal representative stated it had taken its concerns to the EDO (SI Report, reference 20.15).
- On 22 November 2023, Woodside emailed KAC (via legal representative) on an unrelated activity, and noted it was keen to progress the consultation protocol and to meet with KAC. Woodside offered to fund the consultation protocol and a full day meeting but required a breakdown of reasonable costs for the work required (SI Report, reference 20.16).
- **(1)** On 23 November 2023, KAC (via legal representative) emailed Woodside requesting a draft consultation protocol and suggesting several dates for a meeting between KAC and Woodside (SI Report, reference 20.17).
- **(1)** On 23 November 2023, KAC (via legal representative) emailed Woodside seeking payment for legal services already incurred by KAC (SI Report, reference 20.18).
- **(1)** On 29 November 2024, KAC and Woodside communicated via email and phone regarding details for the upcoming meeting (SI Report references 20.19 – 20.22). During the exchange, Woodside confirmed it would not pay legal costs incurred prior to the meeting and requested information about the agenda.
- On 5 December 2023, Woodside and KAC met in Port Hedland (SI Report, reference 20.23). It was agreed that KAC and Woodside would hold a workshop in early 2024 to consult on current EPs and would finalise a framework agreement for ongoing consultation and partnership. At the meeting Woodside:
  - **(1)** Discussed an Engagement Protocol.
  - Spoke about consultation on EPs including the regulatory context, EMBA, controls and measures to protect the environment, and ongoing consultation.
  - Provided information about what it was seeking to understand from KAC.

- **(4)** KAC asked how Woodside maintains the validity of controls over periods of time, sighting molluscs and turtles as an example in terms of whether current controls would be sufficient in the future.
  - **(4)** Woodside noted that there is ongoing monitoring and it would apply its Management of Change and Revision process to address controls.
  - **(4)** Noted which EPs were the subject of ongoing consultation, including this EP.
  - **(4)** Spoke about planned and unplanned risks.
    - KAC gave a presentation to Woodside on its Sea Country rights and duties:
  - **(2)** Accessing Sea Country for fishing, trapping, crabbing catching turtle, hunting dugong, using stingray barbs for spears and collecting shellfish.
  - **(2)** Visiting offshore islands at low tide.
  - Passing on traditional knowledge to children.
  - **(3)** Totems.
  - **(2, 7)** Intangible heritage including the Yinta (associated with Sea Country).
  - **(2)** Having duties to look after and protect all KAC's Sea Country.
    - KAC outlined its consultation requirements to Woodside:
  - **(2)** Co-designed and co-managed approach to protecting Sea Country.
  - On-going input into EPs.
  - **(1)** An agreement with Woodside.
  - **(5)** Funding for sea rangers.
  - A positive and collaborative relationship.
  - **(1)** The need for an agreement that addresses resourcing issues
  - **(1,2, 3, 5)** Woodside acknowledged KAC's views on consultation requirements.
- **(1)** On 13 December 2023, KAC (via legal representative) emailed Woodside the outcomes of the 5 December meeting, confirming availability for a workshop in March 2024 and that KAC and Woodside aim to reach agreement on an engagement protocol by mid-2024 (SI Report, reference 20.24).
- On 20 December 2023, Woodside phoned KAC to follow up on the 5 December 2023 meeting and ask if there was any other information, it could provide KAC. KAC asked if it could receive more information about how cultural values are recorded in an EP. KAC also asked if Woodside could resend the Program of Ongoing Engagement document (SI Report, reference 20.25). Woodside responded it would send an email with the requested information.
- **(2, 3)** On 20 December 2023, Woodside emailed KAC (via legal representative) following up on the 5 December 2023 meeting outcomes and phone call discussion that day. The email included details on how Woodside records and manages all cultural information and values provided by KAC (SI Report, reference 20.26).
- On 20 December 2023, KAC emailed Woodside (via legal representative) (SI Report, reference 20.27), requesting Woodside to note its:
  - **(6)** cultural interest in coastal landforms and coastal native vegetation. **(6)** Woodside has assessed impacts and risks to coastal landforms and coastal native vegetation in the EP.
  - **(7)** cultural interest in cultural heritage sites and intangible cultural heritage associated with the coast and the ocean. **(7)** Woodside avoids disturbance to cultural heritage sites and values. Heritage values, risks and mitigation measures are recorded in the EP.
- **(1)** On 13 January 2024, KAC (via legal representative) emailed Woodside a letter outlining proposed costs to settle an agreement with the KAC Board (SI Report, reference 20.28).

- (1) On 21 February 2024, Woodside emailed KAC (via legal representative) (SI Report, reference 20.29) discussing costings and attached a letter with the terms of a draft agreement noting:
  - Level of information to satisfy KAC to make informed decisions on the proposed activities.
  - Reasonable period for consultation.
  - How information would be provided.
- **(1)** On 10 March 2024, KAC (via legal representative) emailed Woodside a draft consultation agreement for Woodside to review (SI Report, reference 20.30).
- (1) On 12 March 2024, Woodside emailed KAC via its legal representative to acknowledge receipt of the draft agreement and note it would review and return to KAC in the future (SI Report, reference 20.31).
- (1) On 4 April 2024, Woodside emailed KAC (via legal representative) advising Woodside had reviewed the draft agreement and provided some amendments for KAC's consideration (SI Report, reference 20.32).
- **(1)** On 4 April 2024, KAC (via legal representative) emailed Woodside advising the amendments were not acceptable (SI Report, reference 20.33).

Summary of information provided and record of consultation for this EP:

- On 17 June 2024, Woodside emailed KAC advising of the proposed activity (Record of Consultation, reference 6.2.26), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that KAC and its members may have within the EMBA, information on how KAC would like to engage, and requested that KAC provide information to other individuals as required.
- On 26 June 2023, Woodside emailed KAC (via legal representative) following-up on a previous email regarding the status of the draft agreement (SI Report, reference 20.34).
- On 3 July 2024, Woodside emailed KAC (via legal representative) a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 20.35).
- **(2)** On 3 July 2024, KAC (via legal representative) emailed Woodside informing that the draft agreement was being addressed by KAC's in-house counsel, who would revert to Woodside about the proposed agreement and Woodside's environmental management plan consultation emails (SI Report, reference 20.36).
- On 3 July 2024, KAC (via legal representative) emailed Woodside acknowledging receipt of the reminder about the current activity's consultation and that KAC would seeking an agreement with Woodside that addresses all consultation requirements now and into the future (SI Report, reference 20.37).
- On 3 July 2024, Woodside emailed KAC (via legal representative) acknowledging receipt of the previous email and looking forward to KAC's response to the current activity and reinforcing to provide support as required (SI Report, reference 20.38).
- (2) On 3 July 2045, Woodside emailed KAC (via legal representative) thanking for the update about the draft agreement and noting it was looking forward to hearing from KAC's in-house counsel, and requesting their contact details (SI Report, reference 20.39).

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with KAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1)	**(1)** **Woodside assessment:** A consultation agreement with KAC aligns with Woodside's Program of Ongoing Engagement with	**(1)** Woodside's program to actively support Traditional Custodians' capacity for ongoing engagement and

KAC has requested a consultation agreement with Woodside that includes Woodside meeting consultation costs.	Traditional Custodians and would be effective mechanism to address resourcing. **Woodside response:** Woodside will finalise the draft agreement with KAC which was sent to KAC in February 2024. It will be used to frame ongoing consultation during the life of the EP.	consultation on EPs is currently being implemented. The draft agreement with KAC (among other things) will set out the process for ongoing engagement. This is described further in the Program of Ongoing Engagement with Traditional Custodians, (Appendix G). Woodside will continue to consult following acceptance of the EP, as set out in Section 7.10 of the EP.
(2) KAC has outlined its Sea Country rights and duties, including: Looking after and protecting Sea Country, mentioning fishing, trapping, crabbing, catching turtle, hunting dugong, and using stingray barbs for spears and collecting shellfish.	**(2)** **Woodside assessment:** Woodside accepts that KAC may have Sea Country values within EMBAs for EPs. **Woodside response:** Woodside understands cultural and environmental values are intrinsically linked; in addition to the specific controls for cultural features and heritage values outlined in Section 6.10, the controls and performance standards in Section 6.7, 6.8 and 6.9 will ensure impacts to cultural features and heritage values, including marine species and habitats, are acceptable and ALARP.	**(2)** Woodside recognises that KAC holds Sea Country rights and interests that need to be protected (Section 4.9.4). Potential impacts on Cultural Features and Heritage Values are assessed in Section 6.10 of the EP.
(3) At a face-to-face meeting on 5 December 2023, KAC gave a presentation about its Sea Country rights and duties, including its cultural obligation to look after and protect Sea Country and secret habitat totems such as mythic snakes.	**(3)** **Woodside assessment:** Woodside respects KAC's position that it has cultural obligations to look after country and cultural knowledge about Sea Country including totems. **Woodside response:** Woodside has noted KAC's values and interests in Sea Country in Section 4.9.4.	**(3)** Woodside recognises KAC's connection to Sea Country (Section 4.9.4). Potential impacts on Cultural Features and Heritage Values are assessed in Section 6.10 of the EP.
(4) At a face-to-face meeting on 5 December 2023, KAC: Asked how the validity of current controls are maintained.	**(4)** **Woodside assessment:** Management of changes are in accordance with regulations 38 and 39 of the Environment Regulations. Appropriate controls and currency of those controls remain valid through applying new advice from external stakeholders and understanding changes in the environment. **Woodside response:** Woodside applies its Management of Change and Revision process to address controls.	**(4)** Management of Change and Revision process (refer to Section 7.2.5 of this EP).
(5) At a face-to-face meeting on 5 December 2023, KAC noted it was interested in funding for ranger programs.	**(5)** **Woodside Assessment:** Woodside is supportive of ongoing engagement with Traditional Custodians through ranger programs.	**(5)** Opportunities for ongoing engagement with Traditional Owners is able to be addressed under Woodside's Program of Ongoing Engagement (Appendix G).

	Woodside Response: Woodside's Program of Ongoing Engagement is the appropriate framework to address ongoing engagement through opportunities such as a Ranger Program.	
(6) On 20 December 2023, KAC mentioned: Impacts on coastal landforms and coastal native vegetation.	**(6)** **Woodside assessment:** Woodside accepts that KAC has an interest in the impacts on coastal landforms and coastal native vegetation. **Woodside response:** Assessment of the impacts and risks associated with coastal landforms and coastal native vegetation have been captured in Section 4.9 and Section 6.10.	**(6)** Woodside recognises that KAC holds Sea Country rights and interests that need to be protected (Section 4.9). Potential impacts on Cultural Features and Heritage Values are assessed in Section 6.10 of the EP.
(7) On 20 December 2023, KAC mentioned: Tangible and intangible heritage associated with the coast and the ocean.	**(7)** **Woodside assessment:** Woodside seeks to avoid damage or disturbance to cultural heritage (including intangible heritage) and assesses cultural heritage impacts, including both direct and indirect impacts and risks associated with PAPs. Mitigation can include any measure or control aimed at ensuring the viability of the intangible cultural heritage and its intergenerational transmission. **Woodside response:** Woodside understands cultural and environmental values are intrinsically linked; in addition to the specific controls for cultural features and heritage values, the controls and performance standards in section 6 will reduce impacts to cultural features and heritage values, including marine species and habitats.	**(7)** Woodside recognises that KAC holds Sea Country rights and interests that need to be protected (Section 4.9.4). Potential impacts on Cultural Features and Heritage Values are assessed in Section 6.10 of the EP.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with KAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on KAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.

- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that KAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).
- This resulted in a face-to-face meeting being coordinated at the location of KAC's choosing, with nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate.

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with KAC in June 2024. Woodside has addressed and responded to KAC over two months, demonstrating a "reasonable period" of consultation. Woodside asked KAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside asked KAC 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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on KAC's functions, interests, or activities.

4.9.8 Mayala Inninalang Aboriginal Corporation

Mayala Inninalang Aboriginal Corporation (MIAC) is established under the *Native Title Act 1993* by the Mayala people to represent the Mayala 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. Kimberley Land Council (KLC) is the nominated Representative of MIAC.

Historical engagement:

- On 19 July 2023, Woodside emailed MIAC (via KLC) to request it forward an email from Woodside to MIAC about guidelines and policies released by NOPSEMA (SI Report, reference 21.1). The email included NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that MIAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 21.2).
- On 8 August 2023, NOPSEMA emailed Woodside (SI Report, reference 21.3) enclosing a letter via MIAC relating to among other things:
  - Culturally appropriate consultation processes.
  - Information that will support free, prior and informed consent.
  - **(1)** Financial support to bring together the right people to ensure appropriate consultations.
- On 16 October 2023, Woodside emailed MIAC introducing a new Woodside focal point and offering the opportunity for feedback by meeting in person with the Board and members (SI Report, reference 21.4).

- On 18 October 2023, Woodside emailed KLC asking if previous correspondence had been received and passed on to MIAC (SI Report, reference 21.5).
- On 26 October 2023, KLC emailed Woodside advising that their email had been forwarded to the relevant corporation (SI Report, reference 21.6).
- **(1)** On 27 October 2023, Woodside emailed MIAC (via KLC) following up on previous emails, informing MIAC that Woodside would cover meeting costs. Alternatively, Woodside suggested an online meeting if that was the preferred method of consultation. No response has been received (SI Report, reference 21.7).
- On 12 April 2024, Woodside emailed MIAC (via KLC) with an offer to meet and discuss Woodside activities and the opportunity to meet with MIAC Board and Traditional Owners (SI Report, reference 21.8).
- On 12 April 2024, MIAC (via KLC) emailed Woodside to inform Woodside that the previous email had been forwarded to MIAC for action (SI Report, reference 21.9).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed MIAC advising of the proposed activity (Record of Consultation, reference 6.2.27), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that MIAC and its members may have within the EMBA, information on how MIAC would like to engage, and requested that MIAC provide information to other individuals as required.
- On 5 July 2024, Woodside emailed MIAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 21.10). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with MIAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) MIAC stated that they are not funded and required financial support for ongoing consultation.	**(1)** **Woodside assessment:** Woodside supports reasonable funding for costs associated with consultation. **Woodside response:** Woodside has responded to MIAC's financial requests in the 8 August 2023 letter and have offered financial support for ongoing consultation on 27 October 2023, which has not yet been taken up by MIAC. Sufficient information to allow informed assessment on this activity has been provided, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. 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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with MIAC 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 MIAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that MIAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with MIAC in June 2024. Woodside has addressed and responded to MIAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked MIAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on MIAC's functions, interests, or activities.

4.9.9 Murujuga Aboriginal Corporation

Murujuga Aboriginal Corporation (MAC) is established under the Burrup and Maitland Industrial Estates Agreement and is the representative body for the Traditional Custodians for Murujuga being the Ngarluma, the Mardudhunera, the Yaburara, the Yindjibarndi, and the Wong-Goo-Tt-Oo peoples (collectively Ngarda-Ngarli). MAC is the cultural authority for Murujuga and is responsible for the management and protection of its cultural values.

Historical engagement:

- **(1)** On 1 September 2023, MAC emailed a letter to Woodside (SI Report, reference 22.1) noting the following:
  - In response to Woodside's email of 21 August, MAC consulted with women appointed to its Circle of Elders.
  - MAC is comfortable that the women in the Circle of Elders are the right people to be consulted about these matters.
  - MAC notes that it would be extremely unusual for knowledge to be held by an individual without surrounding groups knowing about it.
  - Members of the Circle of Elders themselves represent the Ngarda-Ngarli; the collective term for the Traditional Custodians who look after Murujuga Country.

- **(1)** On 14 December 2023, Woodside met with MAC Board and Circle of Elders and CEO in Karratha to discuss accepted EPs as well as upcoming EPs being submitted in 2024 (SI Report, reference 22.2). The meeting also reconfirmed MAC as the cultural authority over Murujuga and spoke to the specific authority of its senior law men and women.
- On 23 April 2024, Woodside emailed MAC and indicated it looked forward to a reply and offered assistance to make the process easier if required (SI Report, reference 22.3).
- On 23 April 2024, MAC emailed Woodside (SI Report, reference 22.4) and raised the following:
  - **(2)** The lack of broader-scale bathymetric information on the submerged landscape and the potential for impact on jinna (songlines).
  - **(3)** That MAC has no specific knowledge of tangible or intangible heritage that may be impacted.
  - **(4)** EMBAs and management procedures in place to protect cultural values in addition to environmental values.
  - **(5)** That EPs captures a process for engaging with MAC to protect cultural, heritage and Outstanding Universal Values in the event of an incident.
  - **(6)** That it recommends Woodside also consult Ngarluma Aboriginal Corporation.
- On 8 May 2024, Woodside emailed MAC to provide further information (SI Report, reference 22.5) including:
  - **(2)** Woodside's continued support to work with MAC to undertake mapping of areas significant to MAC.
  - **(2)** Woodside's continued support to undertake further ethnographic surveys focused on jinna at MAC's convenience.
  - **(3)** That Woodside welcomed MAC's advice on identifying cultural features and values in the absence of information from further surveys and mapping.
  - **(4)** How the EMBA is determined.
  - **(5)** How Woodside uses modelling to develop response plans in the unlikely event of an incident, including notification requirements to Traditional Custodians.
  - **(6)** That Woodside has also consulted with Ngarluma Aboriginal Corporation on this activity.

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed MAC advising of the proposed activity (Record of Consultation, reference 6.2.28), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that MAC and its members may have within the EMBA, information on how MAC would like to engage, and requested that MAC provide information to other individuals as required.
- On 5 July 2024, Woodside emailed MAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 22.6). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with MAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) On 1 September 2023, MAC advised Woodside that it was the appropriate body corporate and cultural authority over Murujuga.	**(1)** **Woodside assessment**: Woodside accepts and respects MAC's position as the appropriate body corporate and cultural authority over Murujuga.	**(1)** Not required.

	Woodside response: Woodside continues to consult and engage with MAC as the appropriate body corporate and cultural authority over Murujuga.	
(2) On 23 April 2024, MAC raised that there was a lack of broader-scale bathymetric information for the trunkline area and the impact on jinna (songlines).	**(2)** **Woodside assessment**: Woodside acknowledges MAC's position that there is a lack of bathymetric information. Woodside notes that the EP is for continued operation of existing infrastructure. The EP includes the Unexpected Finds Procedure (Section 7.6) which addresses the risk of discovery of potential underwater cultural material. **Woodside response**: Woodside has previously proposed to MAC that MAC work to determine a scope of works to determine further bathymetric information on the area. This proposal is under consideration by MAC and Woodside remains supportive of undertaking this work. Woodside also remains supportive of conducting further ethnographic surveys with MAC, following the initial phase of works in 2020 which focused on jinna and their connection from Murujuga to inland areas.	**(2)** Cultural features and heritage values including jinna (songlines) are identified and assessed in Sections 4.9 and 6.10 of the EP.
(3) On 23 April 2024, MAC advised it has no specific knowledge of tangible or intangible heritage that might be impacted.	**(3)** **Woodside assessment**: Woodside uses multiple sources of information including publicly available literature, heritage databases and feedback from consultation in order to identify tangible and intangible cultural features of the environment, as described in Sections 4.9 and 6.10. **Woodside response**: Woodside recognises the difficulty MAC faces in identifying tangible and intangible heritage on the submerged continental shelf in the absence of bathymetric mapping and ethnographic assessment of the results. In June 2023 Woodside proposed a project to MAC that would undertake mapping of areas identified by MAC as a priority in understanding this landscape. MAC has not accepted this proposal and through several meetings with MAC between July 2023 and February 2024 Woodside understands that MAC intends to issue a modified proposal to conduct this work.	**(3)** Cultural features and heritage values are identified and assessed in Sections 4.9 and 6.10 of the EP.
(4) On 23 April 2024, MAC noted the size of the EMBA and management procedures in place to protect cultural values.	**(4)** **Woodside assessment**: Woodside aligns with industry guidance in developing the EMBA. Many replicate model simulations are completed to understand the potential behaviour	**(4)** Woodside has addressed oil spill preparedness and response strategy in Appendix H.

	of the worst-case release under various wind, wave and current conditions and these are combined to create an overall EMBA. Woodside welcomes any advice MAC provides on identifying cultural features or heritage values within the EMBA. **Woodside response**: The EMBA for this activity is determined by a highly unlikely release of marine diesel as the result of damage to the production facility or vessel collision. Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Sections 6.9 of the EP, and Appendix I.	
(5) On 23 April 2024, MAC advocated for a process for engagement to protect cultural heritage and Outstanding Universal values in the event of an incident.	**(5)** **Woodside assessment**: Woodside accepts MAC's advice on the need for engagement in the event of an incident. **Woodside response**: Consultation with relevant Traditional Custodian representatives, including MAC, in the event of an incident is already anticipated under our oil spill response plan.	**(5)** Woodside has addressed oil spill preparedness and response strategy in Appendix H.
(6) On 23 April 2024, MAC advised that Woodside should consult with Ngarluma Aboriginal Corporation.	**(6)** **Woodside assessment**: Woodside accepts MAC's advice on the need to consult with NAC. **Woodside response**: Woodside has consulted with NAC as a relevant person for this EP.	**(6)** Woodside has consulted with NAC as outlined in Appendix F.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with MAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: **Sufficient information:** • Woodside sought direction on MAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation. • Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls. • Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.		

- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that MAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with MAC in June 2024. Woodside has addressed and responded to MAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked MAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. MAC indicated NAC should be consulted. Woodside has consulted with NAC.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on MAC's functions, interests, or activities.

4.9.10 Ngarluma Aboriginal Corporation

Ngarluma Aboriginal Corporation (NAC) is established under the *Native Title Act 1993* by the Ngarluma people to represent the Ngarluma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 18 July 2023, Woodside emailed NAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that NAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email. (SI Report, reference 23.1)
- On 26 July 2023, Woodside emailed NAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 23.2).
- On 3 November 2024, NAC emailed Woodside a draft consultation protocol (SI Report, reference 23.3).
- On 1 March 2024, Woodside emailed NAC a draft consultation agreement for its review (SI Report, reference 23.4).
- On 26 April 2024, Woodside emailed NAC to follow up on the draft consultation agreement and asked for an update from NAC on their review of this agreement (SI Report, reference 23.5). No response was received.

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed NAC advising of the proposed activity (Record of Consultation, reference 6.2.30), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted

information. The email requested information on the interests that NAC and its members may have within the EMBA, information on how NAC would like to engage, and requested that NAC provide information to other individuals as required.

- On 15 July 2024, Woodside emailed NAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 23.6). No response was received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with NAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 7.2.5 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 Environmental Regulations and consultation with NAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on NAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that NAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with NAC in June 2024. Woodside has addressed and responded to NAC over two months, demonstrating a "reasonable period" of consultation. Woodside asked NAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside asked NAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NAC's functions, interests, or activities.

4.9.11 Nganhurra Thanardi Garrbu Aboriginal Corporation

Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) is established under the *Native Title Act 1993* by the Baiyungu people to represent the Baiyungu people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- **(1)** On 15 August 2023, Woodside presented to NTGAC/Yamatji Marlpa Aboriginal Corporation (YMAC) about several activities unrelated to this EP (SI Report reference 24.1). At the meeting, 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 by NTGAC/YMAC initially. Terms for ongoing engagement were discussed, including frequency, participation, and content in the context of the proposed General Project Report.
- **(1)** On 31 August 2023, Woodside emailed NTGAC/YMAC confirming outcomes of a meeting held on 15 August 2023, on activities not relevant to this EP, including that YMAC would provide a first draft of a consultation agreement (SI Report, reference 24.2).
- **(1)** On 14 December 2023, Woodside emailed NTGAC/YMAC attaching the Program of Ongoing Consultation and advised that Woodside wanted to progress negotiations on consultation frameworks with groups represented by YMAC (including NTGAC) (SI Report, reference 24.3). Woodside proposed the protocol would include (among other things):
  - The procedures Woodside will follow when a submission requires consultation,
  - Initial and ongoing consultation in relation to activities,
  - Agreement as to how Woodside will provide NTGAC with the information NTGAC requires to make free, prior and informed decisions about Woodside's EPs,
  - Agreement as to how NTGAC will provide feedback and how that can best be represented in EPs,
  - An agreed schedule of rates for NTGAC's participation in consultation,
  - How the outputs of the consultations will be managed.
- On 21 December 2023, Woodside emailed NTGAC/YMAC to provide a list of upcoming activities, including this activity (SI Report, reference 24.4).
- **(1)** On 28 February 2024, Woodside emailed NTGAC/YMAC with a letter (SI Report, reference 24.5) 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 24.6).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed NTGAC advising of the proposed activity (Record of Consultation, reference 2.29), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that NTGAC and its members may have within the EMBA, information on how NTGAC would like to engage, and requested that NTGAC provide information to other individuals as required.
- On 27 June 2024, Woodside emailed NTGAC (via YMAC) seeking an update on the status of YMAC's review of the consultation framework agreement provided on 25 February 2024, which incorporates Nanda Aboriginal Corporation, Nyangumarta Warrarn Aboriginal Corporation, and Nganhurra Thanardi Garrbu Aboriginal Corporation (SI Report, reference 24.7).
- On 5 July 2024, Woodside emailed NTGAC (via YMAC) a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 24.8). On receipt of an out of office reply to the previous email, Woodside emailed a NTGAC representative a reminder about the proposed activity (SI Report, reference 24.9). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with NTGAC on future opportunities to work together.
- Ongoing discussions with NTGAC regarding the consultation framework agreement are conducted and documented via YMAC.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) NTGAC via YMAC to develop first draft of a Consultation Agreement.	**(1)** **Woodside assessment**: Woodside is supportive of a sustainable consultation framework and has a commitment to ongoing consultation with Traditional Custodians for the life of an EP. **Woodside response**: Separate from consultation for this activity under regulation 25 of the Environment Regulations, Woodside has sent a draft agreement to NTGAC via YMAC in February 2024. This would be used to frame ongoing consultation to occur as part of Woodside's commitment to consultation post regulation 25 of the Environment Regulations. The draft agreement is under review by NTGAC/YMAC.	**(1)** Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on EPs (Appendix G). This includes continued engagement regarding NTGAC and Woodside's proposed draft Consultation Agreement and potential opportunities for alignment with NTGAC's Strategic Plan. Although consultation for the purpose of regulation 25 of the Environment Regulations is complete, Woodside will continue to consult following acceptance of the EP, as required by the implementation strategy as set out in regulation 35(7) of the Environment Regulations.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with NTGAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on NTGAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that NTGAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with NTGAC in June 2024. Woodside has addressed and responded to NTGAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked NTGAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NTGAC's functions, interests, or activities.

4.9.12 Nimanburr Aboriginal Corporation

Nimanburr Aboriginal Corporation (Niminburr) is established under the *Native Title Act 1993* by the Nimanburr people to represent the Nimanburr people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 18 July 2023, Woodside emailed Kimberley Land Council (KLC) on behalf of Niminburr, NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that Nimanburr advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, references 25.1).
- On 6 October 2023, Woodside phoned Nimanburr and was invited to visit the community on 10 October 2023 (SI Report, references 25.2).
- On 6 October 2023, KLC emailed Woodside with a formal invitation to meet and present at the Nimanburr Director's meeting on 13 October 2023 (SI Report, references 25.3).

- On 10 October 2023, Woodside met with Nimanburr in person on Country and hand delivered documents about Woodside activities (SI Report, reference 25.4). At this meeting Woodside also:
  - Explained the nature of EMBAs and how they are developed.
  - Asked if there were any cultural values to be shared with Woodside, noting that information could be kept confidential.
  - Confirmed that Nimanburr would like to be consulted on a quarterly basis about Woodside activities with consultation to take place out on Nimanburr Country.

Summary of information provided and record of consultation for this EP:

- Between 3 – 9 July 2024, Woodside contacted Nimanburr by phone requesting to visit the community on Country or to meet with a representative in Broome to advise of the proposed activity including providing a Summary Information Sheet and to request information on the interests that Nimanburr and its members may have within the EMBA, information on how Nimanburr would like to engage, and requested that Nimanburr provide information to other individuals as required (SI Report, reference 25.5).
- On 10 July 2024, Woodside met with Nimanburr and explained the proposed activity (SI Report, reference 25.6). **(1)** Nimanburr indicated that it understood the proposed activity and EP and did not object however may consult other members. **(1)** Woodside acknowledged Nimanburr's response. No further communication has been received.
- **(1)** On 14 August 2024, Woodside telephone Nimanburr and left a message regarding the activity. Nimanburr return the call and stated it had no issues with the EP (SI Report, reference 25.7).

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with Nimanburr on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) Nimanburr advised it had no issues or concerns for this EP.	**(1)** **Woodside assessment**: Woodside accepts that Nimanburr had no issues or concerns for this EP. **Woodside response**: Should feedback be received after the EP has been accepted (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 of the EP).	**(1)** Existing controls considered sufficient as described in Section 6 and 7.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with Nimanburr for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on Nimanburr's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside advised that Nimanburr can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with Nimanburr in July 2024. Woodside has addressed and responded to Nimanburr over a month, demonstrating a "reasonable period" of consultation.

Woodside asked Nimanburr 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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Nimanburr's functions, interests, or activities.

4.9.13 Nyangumarta Karajarri Aboriginal Corporation (NKAC)

Nyangumarta Karajarri Aboriginal Corporation (NKAC) is established under the *Native Title Act 1993* by the Nyangumarta and Karajarri people to represent the Nyangumarta and Karajarri people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 24 July 2023, Woodside emailed NKAC via Kimberley Land Council (KLC) NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that NKAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 26.1).
- On 26 July 2023, Woodside emailed NKAC (via KLC) Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 26.2).
- On 18 October 2023, Woodside emailed NKAC (via KLC) to confirm whether the email sent from Woodside about other activities had been received and passed along to NKAC (SI Report, reference 26.3).
- On 26 October 2023, KLC (representing NKAC) emailed Woodside to confirm receipt of emails and stated that it would pass on relevant information. KLC did note that turnaround times could be 'timely and delayed' due to several factors (SI Report, reference 26.4).
- On 27 October 2023, Woodside emailed KLC asking for advice on forwarding a meeting request on to NKAC (SI Report, reference 26.5).

- On 23 January 2024, KLC (representing NKAC) emailed Woodside to confirm receipt of emails and stated it would pass on relevant information. KLC noted again that turnaround times could be 'timely and delayed' due to several factors (SI Report, reference 26.6).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed NKAC advising of the proposed activity (Record of Consultation, reference 6.2.31), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that NKAC and its members may have within the EMBA, information on how NKAC would like to engage, and requested that NKAC provide information to other individuals as required.
- On 5 July 2024, Woodside emailed NKAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference, 26.7). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with NCAK on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 (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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with NKAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on NKAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that NKAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.

- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with NKAC in June 2024. Woodside has addressed and responded to NKAC over two months, demonstrating a “reasonable period” of consultation.

Woodside asked BJNAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 (see Section 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NKAC’s functions, interests, or activities.

4.9.14 Nyangumarta Warrarn Aboriginal Corporation

Nyangumarta Warrarn Aboriginal Corporation (NWAC) is established under the *Native Title Act 1993* by the Nyangumarta people to represent the Nyangumarta people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 18 July 2023, Woodside emailed NWAC NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that NWAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 27.1).
- On 26 July 2023, Woodside emailed NWAC Woodside’s planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 27.2).
- **(1)** On 24 November 2023, NWAC (via Yamatji Marlpa Aboriginal Corporation or YMAC) emailed Woodside its communications protocol**.**
  - **(2)** NWAC noted additional expenses would be involved and committed to preparing a budget for Woodside’s consideration (SI Report, reference 27.3).
- On 11 December 2023, Woodside met with NWAC (SI Report, reference 27.4), Woodside:
  - Described the EP framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA’s role as regulator and general contents of EPs.
  - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities open for consultation.
  - 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.
  - Spoke about how EMBAs are developed.
  - Stated that Woodside wanted to understand how the functions, activities, or interests of NWAC 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?

- NWAC said it believed future meetings would be required.
- Woodside advised that it would continue to take feedback from NWAC for the life of EPs.

- On 11 December 2023, Woodside thanked NWAC (via YMAC) for attending Woodside's presentation. Woodside provided a copy of the presentation given at the meeting and followed up on key topics discussed and offered to provide further information regarding the activity (SI Report, reference 27.5).
- **(1)** On 14 December 2023, Woodside emailed YMAC attaching the Program of Ongoing Consultation and advised that Woodside wanted to progress negotiations on consultation frameworks with groups represented by YMAC (including NWAC) (SI Report, reference 27.6). Woodside proposed the protocol would include (among other things):
  - The procedures Woodside will follow when a submission requires consultation.
  - Initial and ongoing consultation in relation to activities.
  - Agreement as to how Woodside will provide NWAC with the information NWAC requires to make free, prior and informed decisions about Woodside's EPs.
  - Agreement as to how NWAC will provide feedback and how that can best be represented in EPs.
  - **(2)** An agreed schedule of rates for NWAC's participation in consultation.
  - How the outputs of the consultations will be managed.
- On 13 February 2024, Woodside emailed NWAC (via YMAC) seeking opportunities for EP consultations for upcoming activities in first half of 2024 (SI Report, reference 27.7).
- **(1)** On 28 February 2024, Woodside emailed NWAC (via YMAC) draft consultation agreements for consideration that include aims of consultation, proposed consultation agreement details and a consultation meeting framework.
  - **(2)** Woodside invites YMAC to propose a schedule of rates and other details relating to its engagements (SI Report, reference 27.8).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed NWAC advising of the proposed activity (Record of Consultation, reference 6.2.32), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that NWAC and its members may have within the EMBA, information on how NWAC would like to engage, and requested that NWAC provide information to other individuals as required.
- On 5 July 2024, Woodside emailed NWAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 27.9). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with NWAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) NWAC has provided Woodside with a Communications Protocol.	**(1)** **Woodside assessment**: An agreement with NWAC aligns with Woodside's Program of Ongoing Engagement with Traditional Custodians and will frame ongoing consultation processes. **Woodside response**: Woodside will finalise the draft agreement with NWAC which was sent to NWAC via YMAC in	**(1)** Woodside's program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on EPs is currently being implemented. The draft agreement with NWAC (among other things) will set out the process for ongoing engagement. This is described

	February 2024. It will be used to frame ongoing consultation during the life of EPs.	further in the Program of Ongoing Engagement with Traditional Custodians, (Appendix G). Woodside will continue to consult following acceptance of the EP, as set out in Section 7.10 of the EP. No additional measures or controls are required.
(2) NWAC has sought funding for expenses relating to communications/consultation.	**(2)** **Woodside assessment**: The draft consultation agreement would be an effective mechanism to address resourcing for ongoing consultation. **Woodside response**: Woodside supports reasonable requests for resourcing. Woodside has invited NWAC via YMAC to propose a schedule of rates and other details as part of the draft consultation agreement.	**(2)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted (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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with NWAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on NWAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that NWAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.

- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with NWAC in June 2024. Woodside has addressed and responded to NWAC over two months, demonstrating a “reasonable period” of consultation.

Woodside asked NWAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NWAC’s functions, interests, or activities.

4.9.15 Nyul Nyul PBC Aboriginal Corporation

Nyul Nyul Aboriginal Corporation (NNAC) is established under the *Native Title Act 1993* by the Nyul Nyul people to represent the Nyul Nyul people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 20 July 2023, Woodside emailed NNAC NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. Woodside also requested NNAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 28.1).
- On 26 October 2023, Woodside emailed NNAC via Kimberley Land Council (KLC) requesting an opportunity to meet with NNAC and consult on EPs. Woodside also offered to pay reasonable sitting costs (SI Report, reference 28.2).
- On 26 October 2023, NNAC/KLC emailed Woodside and stated the NNAC Board would like to meet for a consultation workshop (SI Report, reference 28.3).
- On 1 November 2023, Woodside emailed NNAC/KLC and offered to coordinate and fund the consultation workshop and requested a 3 – 4 hour time slot (SI Report, reference 28.4).
- On 6 November 2023, NNAC/KLC emailed Woodside and suggested a meeting date in February 2024 (SI Report, reference 28.5).
- On 22 February 2024, Woodside presented to the NNAC Board and its legal representative on Woodside activities (SI Report, reference 28.6). During the meeting Woodside discussed EPs under consultation, Woodside’s consultation processes and EMBAs. The Board requested a further workshop with Woodside for corporation members. Woodside confirmed it was available as needed for future requests.

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed NNAC advising of the proposed activity (Record of Consultation, reference 6.2.33), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside’s website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that Nyul Nyul and its members may have within the EMBA, information on how Nyul Nyul would like to engage, and requested that Nyul Nyul provide information to other individuals as required.
- On 18 June 2024, NNAC emailed Woodside acknowledging receipt of email, which will be forwarded to the Board at its next meeting (SI Report, reference 28.7).
- On 18 June 2024, Woodside emailed NNAC to offer the opportunity to meet with the Board to discuss the activity and EP (SI Report, reference 28.8).
- On 5 July 2024, Woodside emailed NNAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 28.9). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with NNAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 (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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with NNAC 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 NNAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that NNAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with NNAC in June 2024. Woodside has addressed and responded to NNAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked NNAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NNAC's functions, interests, or activities.

4.9.16 Robe River Kuruma Aboriginal Corporation (RRKAC)

Robe River Kuruma Aboriginal Corporation (RRKAC) is established under the *Native Title Act 1993* by the Robe River Kuruma people to represent the Robe River Kuruma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 18 July 2023, Woodside emailed RRKAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. Woodside also requested RRKAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. (SI Report, reference 29.1)
- On 26 July 2023, Woodside emailed RRKAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 29.2).
- **(1)** On 11 August 2023, RRKAC emailed Woodside in response to another matter and in addition requesting ongoing consultation and training opportunities for Jajiwurra rangers to prepare rangers for caring for sea and coastal Country (SI Report, reference 29.3).
- **(1)** On 14 August 2023, Woodside emailed RRKAC and requested to meet to discuss training opportunities for rangers (SI Report, reference 29.4).
- **(1)** On 10 September 2023, Woodside emailed RRKAC's ranger focal point to organise a meeting to discuss training opportunities for rangers. Woodside also offered financial support to fund a marine scientist for another activity unrelated to this EP (SI Report, reference 29.6).
- **(2)** On 15 September 2023, RRKAC emailed Woodside in relation to another activity and advised it was not resourced to adequately respond to these matters and would require Woodside to fund additional resources (SI Report, reference 29.6).
- **(2)** On 18 September 2023, Woodside sent two emails to RRKAC clarifying that Woodside could provide funding to support consultation activities and requested RRKAC provide quotes. Woodside included a Proposed Program of Ongoing Engagement with Traditional Custodians and provided information about Woodside's vendor onboarding process (SI Report, references 29.7 – 29.8). No response has been received.
- **(1)** On 3 October 2023, Woodside met with RRKAC to discuss opportunities for Woodside to support ranger programs (SI Report, reference 29.9).
- On 14 November 2023, Woodside emailed RRKAC offering to meet and discuss support for RRKAC to engage in consultation (SI Report, reference 29.10).
- On 11 January 2024, Woodside and RRKAC (SI Report, reference 29.11) held a telephone discussion:
  - RRKAC had recently employed new personnel. RRKAC noted that once the new employees were settled in, RRKAC would be happy to consult with Woodside on relevant EPs.
  - **(3)** RRKAC noted that some RRKAC country is on the coast (and would be affected by an oil spill or another such environmental incident), it felt that EMBAs are far too broad, and the areas covered by EMBAs are far too big and unfeasible.
- **(1,2,3)** 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 EPs, feedback on heritage and cultural values, opportunities for partnering and social investment opportunities for ranger programs, discussion on Sea Country, subsea mapping and Woodside's availability to RRKAC if it would like to pursue this kind of activity and opportunities for future meetings (SI Report, reference 29.12).
- On 26 March 2024, Woodside emailed RRKAC (SI Report, reference 29.13) 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 preferred next steps, and to provide Woodside's Program of Ongoing Engagement.

Summary of information provided and record of consultation for this EP:

- On 17 June 2024, Woodside emailed RRKAC advising of the proposed activity (Record of Consultation, reference 6.2.34), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted

information. The email requested information on the interests that RRKAC and its members may have within the EMBA, information on how RRKAC would like to engage, and requested that RRKAC provide information to other individuals as required.

- On 3 July 2024, Woodside emailed RRKAC reminding about the activity and offering the opportunity to meet with RRKAC's members or relevant Traditional Owners to discuss the activity further (SI Report, reference 29.14).
- **(4)** On 4 July 2024, RRKAC emailed Woodside stating that Woodside's activities and the current EP are complex and controversial, and while in the majority of circumstances, the current activity is unlikely to represent a risk to RRK cultural values, it cannot be entirely ruled out. RRKAC is facing issues of resourcing to engage and consult in detail. At a previous meeting, RRKAC raised the possibility of a bathymetric survey of the coastal shelf as a large-scale project with all affected groups, that unites all groups with an interest asking if Woodside would be prepared to include this in the consultation process (29.15).
- **(4)** On 5 July 2024, Woodside emailed RRKAC acknowledging the challenges of resourcing and recruiting, and to forward the query about a joint/inclusive bathymetric survey with the relevant persons in Woodside. In addition, Woodside requested RRKAC advise how best to consult with its members including meeting face-to-face with members and relevant Traditional Owners (SI Report, reference 29.16).
- **(4)** 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 29.17)

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with RRKAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1) RRKAC is interested in training opportunities for rangers.	**(1)** **Woodside assessment**: Woodside supports ongoing engagement with Traditional Custodians through its Program of Ongoing Engagement. **Woodside response**: Separate from consultation under regulation 25 of the Environment regulations, Woodside has responded to RRKAC's interest with information on ranger programs.	**(1)** Ongoing interest in a ranger program is able to be addressed under Woodside's Program of Ongoing Engagement (Appendix G).
(2) RRKAC noted that it is insufficiently resourced to fully engage and respond regarding EPs.	**(2)** **Woodside assessment**: Woodside supports ongoing engagement for the life of an EP. **Woodside response**: Woodside supports reasonable requests for resourcing and has provided support for meetings for the purpose of consultation.	**(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).
(3) In response to a previous activity, RRKAC noted that some RRKAC country is on the coast (and would be affected by an oil spill or another such environmental incident), it feels that EMBAs are far too broad, and	**(3)** **Woodside assessment**: Woodside aligns with industry guidance in developing the EMBA. Many replicate model simulations are completed to understand the potential behaviour	**(3)** Woodside has addressed oil spill response in Appendix H.

the areas covered by EMBAs are far too big and unfeasible.	of the worst-case release under various wind, wave and current conditions and these are combined to create an overall EMBA. **Woodside response**: Woodside considers it adopts appropriate controls, as demonstrated in Sections 6.8 and 6.9 of the EP, and Appendix H.	
(4) RRKAC raised the potential of a bathymetric survey of the coastline, working with all relevant coastal groups.	**(4)** **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.	**(4)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with RRKAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on RRKAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that RRKAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with RRKAC in June 2024. Woodside has addressed and responded to RRKAC over two months, demonstrating a "reasonable period" of consultation.

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 7.2.5 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.

4.9.17 Wanjina-Wunggurr (Native Title) Aboriginal Corporation (WWAC)

Wanjina- Wunggur (Native Title) Aboriginal Corporation (WWAC) is established under the *Native Title Act 1993* by the Wanjina and Wunggur people to represent the Wanjina and Wunggur people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 19 July 2023, Woodside emailed WWAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that WWAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 30.1).
- On 13 October 2023, Woodside sent an email to the Kimberley Land Council (KLC) on behalf of WWAC enquiring about the best contact person at WWAC as Woodside had not received a response from its initial email. A copy of the initial email was attached (SI Report, reference 30.2).
- On 13 March 2024, Woodside emailed WWAC requesting who to contact regarding EPs and Woodside activities (SI Report, reference 30.3).
- On 16 April 2024, Woodside emailed WWAC (via KLC) requesting that attached email correspondence regarding EPs be forwarded to WWAC, and that Woodside was available to meet face to face or telephone to discuss further (SI Report, reference 30.4).

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed WWAC advising of the proposed activity (Record of Consultation, reference 6.2.35), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that WWAC and its members may have within the EMBA, information on how WWAC would like to engage, and requested that WWAC provide information to other individuals as required.
- On 5 July 2024, Woodside emailed WWAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 30.5). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with MIAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 (including any relevant new information on cultural	No additional measures or controls required.

	values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.5.1 of the EP).	

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with WWAC 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 WWAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that WWAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with WWAC in June 2024. Woodside has addressed and responded to WWAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked WWAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on WWAC's functions, interests, or activities.

4.9.18 Wanparta Aboriginal Corporation

Wanparta Aboriginal Corporation (Wanparta) is established under the *Native Title Act 1993* by the Ngarla people to represent the Ngarla people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 26 July 2023, Woodside emailed Wanparta its planned Program of Ongoing Engagement with Traditional Custodians and expressed Woodside's preference to attend its 31 August 2023 board meeting (SI Report, reference 31.1).
- On 31 August 2023, Woodside met with the Wanparta Board and members in South Hedland (SI Report, reference 31.2). Woodside presented on a number of activities (not related to this activity) and also described the EP framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of EPs. At this meeting, Wanparta:
  - **(1)** stated that water is extremely important to Ngarla people, and they feel a responsibility to look after the ocean and lore.
  - **(2)** asked about ranger group involvement in spill response.
  - Stated that it would like to engage in an annual meeting with Woodside.
- On 4 October 2023, Woodside emailed Wanparta (SI Report, reference 31.3) a summary of a phone call on the same day. Topics discussed included:
  - **(2)** Wanparta's interest in a Wanparta Ranger program.
  - **(3)** Wanparta's interest in EP funding.
  - Wanparta's interest in a Karratha Gas Plant visit, as well as possible school visits and Perth Office visits.
  - Wanparta's request for updates on EPs.
  - Woodside's query into Wanparta's thoughts on a formal process for consultation on future EPs.
- On 6 October 2023, Wanparta emailed Woodside advising that the Board would consider these items at its 4 October 2023 meeting and would revert shortly after (SI Report, reference 31.4).
- **(2)** On 10 November 2023, Wanparta emailed Woodside with a Ngarla Ranger Proposal for Woodside's consideration (SI Report, reference 31.5).
- On 10 November 2023, Woodside telephoned Wanparta (SI Report, reference 31.6) and discussed:
  - **(2)** the Ngarla Ranger Proposal
  - **(3)** Wanparta's funding request for management of EP's
  - the proposed meeting location and date for the Wanparta Board (23 February 2024 at the Karratha Gas Plant).
- **(2)** On 12 November 2023, Woodside emailed Wanparta confirming receipt of the Ranger Proposal (SI Report, reference 31.7).
- **(3)** On 13 November 2023, Wanparta emailed Woodside with a written request for funding to assist ongoing consideration of EPs (SI Report, reference 31.8).
- **(2)** On 24 April 2024, Woodside met with Wanparta at Murujuga. Woodside presented an overview of EPs and ongoing consultation in 2024, and provided information on this activity, Aboriginal employment, and ranger programs. Wanparta informed Woodside that there were no issues following the discussion (SI Report, reference 31.9).
- On 7 May 2024, Wanparta emailed Woodside following the meeting on 24 April 2024 (SI Report, reference 31.10). Wanparta advised:
  - **(1)** The Ngarla people have a deep spiritual connection to Sea Country. **(1, 4)** Woodside recognises Wanparta's interests and potential cultural values and these have been recorded in the EP.
  - **(4)** The Ngarla peoples' totem species – the octopus, stingray, spiny bream fish and kestrel – are of great significance. **(4)** Woodside recognises Wanparta's interests and potential cultural values.
  - **(1)** The protection and management of marine life and healthy ocean plays a significant role in their lore, culture and customs.
- On 5 June 2024, Woodside emailed Wanparta notifying that Woodside had a five year revision EP for the proposed activity, and requested an opportunity to consult with the Wanparta Board. Woodside advised that formal EP correspondence would be sent in mid-June 2024 and requested dates to meet that aligned with Wanparta's availability (SI Report, reference 31.11).

- On 5 June 2024, Wanparta emailed Woodside acknowledging receipt of email and that a Directors' meeting was scheduled for August. Wanparta advised it would be in contact with Woodside (SI Report, reference 31.12).

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Wanparta advising of the proposed activity (Record of Consultation, reference 6.2.36), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that Wanparta and its members may have within the EMBA, information on how Wanparta would like to engage, and requested that Wanparta provide information to other individuals as required.
- On 5 July 2024, Woodside emailed Wanparta a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 31.13).
- On 9 August 2024, Woodside emailed Wanparta enquiring about a Board meeting on 28 August 2024 to discuss the proposed activity and EP (SI Report, reference 31.14).
- On 9 August 2024, Wanparta emailed Woodside confirming a Board meeting on 28 August 2024 and Woodside's attendance to discuss EPs submitted (SI Report, reference 31.15).
- On 9 August 2024, Woodside emailed Wanparta acknowledging receipt of email (SI Report, reference 31.16).
- On 23 August 2024, Wanparta emailed Woodside confirming the agenda for the Wanparta Directors' meeting on 28 August 2024 and Woodside's attendance to discuss the proposed activity and other unrelated activities (SI Report, reference 31.17).
- On 28 August 2024, Woodside met with Wanparta to discuss a number of activities including the proposed activity and EP (SI Report, reference31.18). At the meeting:
  - **(5)** Wanparta acknowledged the activity and EP, raising no claims or objections, and committing to providing written feedback in due course.
  - **(5)** Woodside acknowledged Wanparta's feedback at the meeting, noting it had no claims or objections.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with Wanparta on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1) The Ngarla people have a deep spiritual connection to Sea Country, water is extremely important to Ngarla people, and they feel a responsibility to look after the ocean and lore.	**(1)** **Woodside assessment**: Woodside assessed Wanparta's interest in water to represent potential cultural values. **Woodside response**: Wanparta's interests and potential cultural values have been recorded in EPs, the potential impact on the interests and values, including controls, have been assessed.	**(1)** Woodside updated Section 4.9 to record Wanparta's interests and potential cultural values and assessed potential impact on these, including controls, in Section 6.10.
(2) Wanparta has expressed interest in a range of social investment opportunities including a ranger program and has provided a Ranger Program proposal for Woodside's consideration.	**(2)** **Woodside assessment**: Woodside supports ongoing engagement with Traditional Custodians through its Program of Ongoing Engagement.	**(2)** Ranger programs are able to be addressed as part of Woodside's Program of Ongoing Engagement (Appendix G).

	Woodside response: Separate from consultation, under regulation 25 of the Environment regulations, Woodside has discussed a ranger program with Wanparta and its proposal is under consideration.	
(3) Wanparta expressed an interest in funding to assist in consultation.	**(3)** **Woodside assessment**: Woodside supports resourcing for Traditional Custodians to allow for consultation on proposed activities. **Woodside response**: Woodside has agreed to provide support to Wanparta for consultation purposes.	**(3)** Not required.
(4) On 7 May 2024, Wanparta advised of the significance of its totem species including the octopus, stingray, spiny bream fish and kestrel.	**(4)** **Woodside assessment**: Woodside respects Wanparta's cultural connections and knowledge, including its totem species. **Woodside response**: Woodside has noted the Wanparta's values and interests in its totem species in Section 4.9.4.	**(4)** Woodside updated Section 4.9 to record Wanparta's interests and potential cultural values.
(5) Wanparta raised no claims or objections regarding the activity or related EP at a meeting on 28 August 2024.	**(3)** **Woodside assessment**: Woodside confirms and accepts that Wanparta has no concerns regarding the activity or related EP. **Woodside response**: Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 of this EP).	**(5)** No additional measures or controls are required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with Wanparta 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 Wanparta's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.

- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that Wanparta can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with Wanparta in June 2024. Woodside has addressed and responded to Wanparta over two months, demonstrating a "reasonable period" of consultation.

Woodside asked Wanparta if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Wanparta's functions, interests, or activities.

4.9.19 Wilinggin Aboriginal Corporation

Wilinggin Aboriginal Corporation (Wilinggin) is established under the Native Title Act 1993 by the Ngarinyin people to represent the Ngarinyin people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 18 July 2023, Woodside emailed Wilinggin (via KLC) NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also requested that KLC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 32.1).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Wilinggin advising of the proposed activity (Record of Consultation, reference 6.2.37), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that Wilinggin and its members may have within the EMBA, information on how Wilinggin would like to engage, and requested that Wilinggin provide information to other individuals as required.
- **(1)** On 19 June 2024, Wilinggin emailed Woodside to inform the area of activity was outside the Wilinggin determination area and advised that Wilinggin does not need to be consulted regarding the activity's Environment Plan (SI Report, reference 32.2).
- **(1)** On 19 June 2024, Woodside emailed Wilinggin acknowledging receipt of the email informing Woodside that the proposed activity was outside Wilinggin's determination area, and noted that Woodside would refrain from sending further information about the activity to Wilinggin (SI Report, reference 32.3).

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with Wilinggin on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1) Wilinggin informed Woodside that the area of activity (EMBA) was outside the Wilinggin determination area and advised Woodside that the corporation does not need to be consulted on the activity's EP.	**(1)** **Woodside assessment**: Woodside acknowledges Wilinggin's feedback that the proposed activity is outside its determination area. **Woodside response**: Woodside will accept feedback for the life of the EP. Should Wilinggin decide to provide feedback at a future date Woodside will assess this and where appropriate, apply its Management of Change and Revision process (see Section 7.2.5 of this EP).	**(1)** No additional measures or controls are required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with Wilinggin 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 Wilinggin's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that Wilinggin can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.

- Woodside commenced consultation with Wilinggin in June 2024. Woodside has addressed and responded to Wilinggin over two months, demonstrating a “reasonable period” of consultation.

Woodside asked Wilinggin 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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Wilinggin’*s* functions, interests, or activities.

4.9.20 Wirrawandi Aboriginal Corporation (WAC)

Wirrawandi Aboriginal Corporation (WAC) is established under the *Native Title Act 1993* by the Mardudhunera and Yaburara people to represent the Mardudhunera and Yaburara people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- **(1)** On 19 July 2023, Woodside met with WAC regarding Woodside activities. During the meeting WAC queried the use of rangers in the event of an incident (SI Report, reference 33.1).
- (1) On 20 July 2023, Woodside emailed WAC with thanks for meeting. Woodside confirmed its support for a ranger program and further discussions regarding opportunities for ongoing engagement (SI Report, reference 33.2).
- On 20 July 2023, WAC emailed Woodside with thanks for the email and requesting a list of EPs where WAC is a relevant group (SI Report, reference 33.3).
- On 26 July 2023, Woodside emailed WAC Woodside’s planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 33.4).
- **(2)** On 31 August 2023, WAC emailed a letter to Woodside proposing a framework agreement to provide a streamlined, formalised approach to consultation between WAC and Woodside, and indicated interest in a ranger program (SI Report, reference 33.5).
- **(2)** On 11 September 2023, WAC emailed Woodside with a copy of the letter of 31 August, commenting on EPs not relevant to this activity and requesting that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation (SI Report, reference 33.6).
- (2) On 12 September 2023, Woodside emailed WAC confirming receipt of the email of 11 September (SI Report, reference 33.7).
- (2) On 20 October 2023, Woodside met with WAC to discuss current EPs listed in the 11 September email by WAC and to confirm WAC’s preferred EP consultation process. Woodside reiterated that WAC has an opportunity for ongoing consultation on EPs in which it has a cultural interest. Woodside acknowledged WAC is in the process of a corporate restructure which may impact WAC’s response times (SI Report, reference 33.8).
- (2) On 6 March 2024, Woodside emailed WAC (SI Report, reference 33.9) with a letter setting out the draft terms of an agreement between WAC 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.

Summary of information provided and record of consultation for this EP:

- On 17 June 2024, Woodside emailed WAC advising of the proposed activity (Record of Consultation, reference 6.2.38), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that WAC and its members may have within the EMBA, information on how WAC would like to engage, and requested that WAC provide information to other individuals as required.
- On 25 June 2024, Woodside met with WAC at a quarterly community heritage meeting (SI Report, reference 33.10), where the proposed activity was discussed and the following was raised:
  - **(3)** WAC raised no concerns regarding the activity or related EP.
  - **(3)** Woodside acknowledged WAC's feedback.
- On 15 July 2024, Woodside met with WAC to discuss three EPs including the proposed activity (SI Report, reference 33.11). At this meeting:
  - **(3)** WAC agreed there were no concerns with the EPs as they were revisions. **(3)** Woodside acknowledged the feedback in the meeting.
  - WAC expressed gratitude for Woodside's support and availability to discuss the material in person.
  - **(4)** WAC stated it was keen to participate in Sea mapping and to discuss possible sponsorship and commercial opportunities with industry once a General Manager is recruited. **(4)** Woodside noted the interest in the meeting.
  - WAC are committed to ensuring cultural governance is the foundation of consultation with industry.
- On 15 July 2024, following a meeting on the same day, WAC emailed Woodside about the three EPs submitted to WAC for feedback and consultation including the proposed activity (SI Report, reference 33.12). WAC stated it appreciated the information provided and was grateful for the opportunity to be consulted, and noted:
  - WAC was in the process of recruiting a General Manager.
  - **(3)** WAC was satisfied that the three activities including the proposed activity in this EP would have minimal impact to Sea and Country within WAC's determination and therefore WAC had no concerns.
  - The WAC Board was eager to meet and consult with Woodside for future EPs.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with WAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) WAC has expressed an interest in social investment opportunities including a Ranger Program.	**(1)** **Woodside assessment**: Woodside is supportive of ranger programs and progressing opportunities for ongoing engagement. **Woodside response**: Woodside's Program of Ongoing Engagement is the appropriate framework to address ongoing engagement through opportunities such as a Ranger Program.	**(1)** Support for a ranger program is able to be addressed as part of Woodside's Program of Ongoing Engagement (Appendix G).

(2) WAC has requested that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation a desire for ongoing engagement and partnership through a Framework Agreement.	**(2)** **Woodside assessment**: Woodside has confirmed and accepts that WAC is seeking to establish a framework agreement for the purposes of ongoing consultation with Woodside. **Woodside response**: Separate from consultation under regulation 25 of the Environment Regulations, Woodside has sent a draft consultation agreement in March 2024 and will work with WAC to finalise the agreement.	**(2)** Although consultation for the purpose of regulations 25 of the Environment Regulations is complete, Woodside will continue to engage with WAC through ongoing engagement and continue to progress the consultation agreement as part of Woodside's Program of Ongoing Engagement (Appendix G).
(3) WAC raised no concerns regarding the activity or related EP.	**(3)** **Woodside assessment**: Woodside confirms and accepts that WAC has no concerns regarding the activity or related EP. **Woodside response**: Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 of this EP).	**(3)** No additional measures or controls are required.
(4) WAC is keen to participate in Sea mapping and to discuss possible sponsorship and commercial opportunities with industry.	**(4)** **Woodside assessment:** Woodside recognises WAC's interest to participate in Sea mapping, and to discuss sponsorship and commercial opportunities with industry. **Woodside response:** Woodside notes WAC's interest to participate in Sea mapping along with other opportunities with industry, and will continue to liaise with WAC when discussing future EPs.	**(4)** No additional measures or controls are required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with WAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: **Sufficient information:** • Woodside sought direction on WAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.		

- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that WAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with WAC in June 2024. Woodside has addressed and responded to WAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked WAC 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 7.2.5 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.

4.9.21 Wunambal Gaambera Aboriginal Corporation

Wunambal Gaambera Aboriginal Corporation (WGAC) is established under the Native Title Act 1993 by the Wunambal Gaambera people to represent the Wunambal Gaambera people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 18 July 2023, Woodside emailed WGAC/KLC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. Woodside requested that WGAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 34.1).
- On 18 October 2023, Woodside emailed WGAC seeking to meet with the WGAC Board to provide information and seek feedback on Woodside activities (SI Report, reference 34.2).
- On 23 November 2023, Woodside emailed WGAC offering a meet and greet to discuss potential funding of future arrangements for meetings and talk through the EP process (SI Report, reference 34.3).

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed WGAC advising of the proposed activity (Record of Consultation, reference 6.2.39), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that WGAC and its members may have within the EMBA, information on how WGAC would like to engage, and requested that WGAC provide information to other individuals as required.

- On 5 July 2024, Woodside emailed WGAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 34.4). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with WGAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
No feedback, objects 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 7.5.1 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 Environmental Regulations and consultation with WGAC 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 WGAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that WGAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with WGAC in June 2024. Woodside has addressed and responded to WGAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked WGAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on WGAC's functions, interests, or activities.

4.9.22 Yawoorroong Miriwoong Galirrawoong Yirrgeh Noong Dawang Aboriginal Corporation (MG Corp)

MG Corp is established under the Native Title Act 1993 by the Miriuwung and Gajerrong people to represent the Miriuwung and Gajerrong people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 18 July 2023, Woodside emailed MG Corp NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that MG Corp advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 35.1).

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed MG Corp advising of the proposed activity (Record of Consultation, reference 6.2.40), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that MG Corp and its members may have within the EMBA, information on how MG Corp would like to engage, and requested that MG Corp provide information to other individuals as required.
- On 5 July 2024, Woodside emailed MG Corp a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, and confirmed a date to submit feedback about the activity (SI reference, 35.2). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with MG Corp on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
No feedback, objects 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 7.2.5 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 Environmental Regulations and consultation with MG Corp 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 MG Corp's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.

- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that MG Corp can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with MG Corp in June 2024. Woodside has addressed and responded to MG Corp over two months, demonstrating a "reasonable period" of consultation.

Woodside asked MG Corp if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on MG Corp 's functions, interests, or activities.

4.9.23 Yawuru Native Title Holders Aboriginal Corporation

Yawuru Native Title Holders Aboriginal Corporation (Yawuru) is established under the *Native Title Act 1993* by the Yawuru people to represent the Yawuru people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 18 July 2023, Woodside emailed Yawuru NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. Woodside requested that Yawuru advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 36.1).

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Yawuru advising of the proposed activity (Record of Consultation, reference 6.2.41), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that Yawuru and its members may have within the EMBA, information on how Yawuru would like to engage, and requested that Yawuru provide information to other individuals as required.
- On 5 July 2024, Woodside emailed Yawuru a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI reference, 36.2). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with Yawuru on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 (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 7.2.5 of the EP).	No additional measures or controls required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with Yawuru for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on Yawuru's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that Yawuru can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with Yawuru in June 2024. Woodside has addressed and responded to Yawuru over two months, demonstrating a "reasonable period" of consultation.

Woodside asked Yawuru if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Yawuru's functions, interests, or activities.

4.9.24 Yindjibarndi Aboriginal Corporation

Yindjibarndi Aboriginal Corporation (Yindjibarndi) is established under the *Native Title Act 1993* by the Yindjibarndi people to represent the Yindjibarndi people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement

- On 18 July 2023, Woodside emailed Yindjibarndi NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. Woodside requested that Yindjibarndi advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email (SI Report, reference 37.1).
- On 26 July 2023, Woodside emailed Yindjibarndi (via the Ngarluma Yindjibarndi Foundation Ltd, or NYFL) Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 37.2).
- **(1)** On 1 August 2023, Yindjibarndi emailed Woodside advising NYFL would manage oil and gas matters on its behalf (SI Report, reference 37.3).
- **(1)** On 9 August 2024, as directed by Yindjibarndi, Woodside emailed NYFL regarding Woodside's EPs (SI Report, reference 37.4).

Summary of information provided and record of consultation for this EP:

- On 17 June 2024, Woodside emailed Yindjibarndi advising of the proposed activity (Record of Consultation, reference 6.2.42), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that Yindjibarndi and its members may have within the EMBA, information on how Yindjibarndi would like to engage, and requested that Yindjibarndi provide information to other individuals as required.

See NYFL on behalf of Yindjibarndi for record of further engagement.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with Yindjibarndi on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) Yindjibarndi has instructed Woodside that it will be represented by NYFL in ongoing discussion about EPs.	**(1)** **Woodside assessment**: Woodside accepts Yindjibarndi's right to be represented at its own choosing. **Woodside response**: Woodside will engage with NYFL on behalf of Yindjibarndi for ongoing consultation related to this activity.	**(1)** Ongoing consultation will be undertaken as set out in Section 7.10 of the EP.
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 7.2.5 of this EP).	No additional controls or measure required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with Yindjibarndi (via NYFL) for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on Yindjibarndi's (via NYFL) preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that Yindjibarndi (via NYFL) can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with Yindjibarndi (via NYFL) in June 2024. Woodside has addressed and responded to Yindjibarndi (via NYFL) over two months, demonstrating a "reasonable period" of consultation.

Woodside asked Yindjibarndi (via NYFL) 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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Yindjibarndi's (via NYFL) functions, interests, or activities.

4.9.25 Yinggarda Aboriginal Corporation (YAC)

Yinggarda Aboriginal Corporation (YAC) is established under the *Native Title Act 1993* by the Yinggarda people to represent the Yinggarda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Historical engagement:

- On 19 July 2023, Woodside emailed YAC (via Gumala Aboriginal Corporation) NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that YAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult (SI Report, reference 38.1).
- On 26 July 2023, Woodside emailed YAC (via Gumala Aboriginal Corporation) Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 38.2).
- On 4 August 2023, YAC (via legal representative) emailed Woodside confirming it had been retained by the YAC Board to deal with requests for consultation for NOPSEMA purposes (SI Report, reference 38.3). The email noted:
  - **(1)** that YAC would like Woodside to submit a consultation agreement for YAC's consideration.

  - **(2)** funding was required.
- **(2)** On 10 August 2023, YAC (via legal representative) emailed Woodside and requested appropriate resources and time, including legal advice be approved by Woodside to allow YAC to consider NOPSEMA matters (SI Report, reference 38.4).
- On 11 August 2023, Woodside emailed YAC (via legal representative) (SI Report, reference 38.5) outlining:
  - **(2)** the process required for funding approval.
  - **(1)** that Woodside would shortly send through a Draft Consultation Agreement.
- On 14 August 2023, YAC (via legal representative) emailed Woodside stating that it looked forward to receiving the consultation agreement for consideration and agreeing arrangements for provision of resourcing (SI Report, reference 38.6).
- **(1)** On 13 September 2023, YAC (via legal representative) emailed Woodside in response to another activity, advising that in the absence of a draft consultation agreement it was unable to respond in substance to matters raised (SI Report, reference 38.7).
- **(1)** On 14 September 2023, Woodside emailed YAC (via legal representative) with a proposed consultation framework (SI Report, reference 38.8).
- On 14 September 2023, YAC (via legal representative) confirmed receipt of the consultation framework and advised it would seek direction from the YAC board (SI Report, reference 38.9).
- On 13 October 2023, YAC's legal representative emailed Woodside (SI Report, reference 38.10). Among other things, it noted YAC required an indemnity and hold harmless clause be included in the Framework Agreement to protect against potential exposure to activist litigation.
- On 2 November 2023, Woodside emailed YAC's legal representative advising it would not agree to the request to indemnify YAC against any court proceedings (SI Report, reference 38.11).
- On 2 November 2023, YAC's legal representative emailed Woodside requesting information on the reason for Woodside's position not to include indemnification in the consultation agreement (SI Report, reference 38.12).
- On 18 November 2023, Woodside emailed YAC (via legal representative) further information about why it would not indemnify YAC 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 (SI Report, reference 38.13).
- **(1)** On 8 March 2024, Woodside emailed YAC (via a legal representative) with a draft consultation agreement for consideration by YAC and an invitation for YAC to propose a schedule of rates and other details relating to engagement (SI Report, reference 38.14). The draft agreement included:
  - Aims of consultation.
  - Proposed consultation agreement details.
  - A consultation meeting framework.
- **(2)** On 12 March 2024, YAC (via legal representative) emailed Woodside with a proposed schedule of rates, indicating they would wait for a response on the proposed schedule of rates before putting the consultation agreement before the YAC Board (SI Report, reference 38.15).
- On 27 March 2024, Woodside emailed YAC (via a legal representative) advising they would follow up the status of Woodside's response (SI Report, reference 38.16).
- **(2)** On 4 April 2024, Woodside emailed YAC (via a legal representative) advising that Woodside had undertaken a review, providing the Proposed Schedule of Rates for inclusion in the agreement, and asking for the date of the next Board meeting be provided. (SI Report, reference 38.17).
- **(2)** On 8 April 2024, YAC (via legal representative) emailed Woodside advising the YAC Board would meet next on 9 May 2024, asking if Woodside would fund the cost of the meeting for consultation, how much time Woodside would require, and asking for a list of matters for discussion to enable them to provide a cost estimate for legal fees (SI Report, reference 38.18).

- **(2)** On 10 May 2024, Woodside emailed YAC (via legal representative) advising Woodside would like to meet with Yinggarda either during or outside of a Board meeting, at Yinggarda's preferred location, that Woodside would cover agreed meeting costs and requesting a cost estimate (SI Report, reference 38.19). Woodside proposed matters for discussion including:
  - EP consultation: overview and EPs current at the time of meeting.
  - Upcoming consultation.
  - Matters Yinggarda would like to discuss.
  - Actions arising and next steps.

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed YAC advising of the proposed activity (Record of Consultation, reference 6.2.43), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that YAC and its members may have within the EMBA, information on how YAC would like to engage, and requested that YAC provide information to other individuals as required.
- On 20 June 2024, Woodside emailed YAC to offer the opportunity to meet with the Board to discuss the activity and requested YAC forward cost estimates to Woodside (SI Report, reference 38.20).
- On 20 June 2024, YAC (via legal representative) emailed Woodside confirming Woodside meet and present to YAC Board, and the organisation would be in contact to confirm details (SI Report, reference 38.21).
- On 20 June 2024, Woodside emailed YAC (via legal representative) acknowledging confirmation of meeting and will wait to hear from YAC to confirm details (SI Report, reference 38.22).
- On 12 July 2024, Woodside emailed YAC (via legal representative) a reminder about the proposed activity including a reference to the original Record of Consultation email, as well as confirming that Woodside would meet with the YAC Board to discuss the EP further. Woodside queried if a date had been set and any costs involved (SI Report, reference 38.23).
- On 16 July 2024, Woodside emailed YAC, following a phone conversation the previous day, to confirm the meeting date and a cost estimate (SI Report, reference 38.24).
- On 16 July 2024, YAC emailed Woodside to confirm a meeting date of 18 July 2024, provided a contact to discuss costs and a list of attendees (SI Report, reference 38.25).
- On 16 July 2024, Woodside emailed YAC informing that it would confirm the number of Woodside attendees and that Woodside would bring the presentation to the meeting (SI Report, reference 38.26).
- On 18 July 2024, Woodside met with YAC (SI Report, reference 38.2) to discuss this EP and other unrelated EPs. Matters discussed relating to this EP included:
  - **(1)** Possibility of setting up workshops to discuss the formalisation of an agreement between Woodside and YAC.
  - **(3)** Support for education and training including ranger programs and spill response training.
  - **(4)** Potential impact to marine life. **(4)** Woodside responded to questions about marine life including turtles, whales, sharks to the satisfaction of YAC and undertook to provide follow up information.
  - **(5)** YAC's interest in employment/training opportunities.
- On 26 July 2024, Woodside wrote to YAC (SI Report, reference 38.28) to respond to matters including:
  - **(1)** Woodside's commitment to ongoing consultation about EPs and continuing to build relationship with YAC including YAC providing feedback on the consultation framework.

- **(3, 5)** Woodside said it would look forward to hearing from YAC about YAC's plans for a ranger program and will keep YAC informed about Woodside's consideration of ranger initiatives and training opportunities.
- **(4)** Woodside has undertaken numerous environmental studies that form part of the EPs and has an ongoing commitment to environmental studies and research some of which are set out on Woodside's website. Woodside also committed to ongoing consultation with YAC in relation to environmental impacts including to marine life.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with YAC on future opportunities to work together.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1) YAC requested a consultation agreement with Woodside and stated it was unable to respond substantially until Woodside had provided a draft Consultation Framework Agreement which includes suggested timeframes to settle the agreement and timeframes for ongoing consultation with the Board.	**(1)** **Woodside assessment**: An agreement with YAC aligns with Woodside's Program of Ongoing Engagement with Traditional Custodians and will frame ongoing consultation processes. **Woodside response**: Woodside will finalise an agreement with YAC, although Woodside does not consider YAC's request for a consultation agreement as a pre-requisite for consultation under regulation 25 of the Environment Regulations. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff. Woodside has also provided a reasonable period and opportunity for consultation. The draft agreement sent to YAC in September 2023, will be used to frame ongoing consultation during the life of the EP. Woodside is waiting on a response from YAC.	**(1)** Woodside's program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on EPs is being implemented, the draft agreement with YAC (among other things) will set out the process for ongoing engagement. This is described further in the Program of Ongoing Engagement with Traditional Custodians (Appendix G).
(2) YAC requested resourcing to engage in ongoing consultation.	**(2)** **Woodside assessment**: Woodside supports reasonable requests for resourcing. **Woodside response**: Woodside will cover agreed costs for the purpose of meeting for consultation on EPs. The proposed agreement outlined in (1), would be an effective mechanism to address resourcing for ongoing consultation.	**(2)** The Consultation Agreement will support any reasonable requests for funding for the purposes of consultation.
(3) YAC has enquired about support for education and training including ranger programs, including desire to be involved in local emergency response capability, potentially via an Indigenous Ranger	**(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.	**(3)** The Program for Ongoing Engagement with Traditional Custodians (Appendix G) includes consideration of programs to support Indigenous Rangers, and support for Indigenous oil spill response capabilities.

Program. Interested in opportunities for employment/training.	**Woodside response:** Woodside looks forward to hearing about YAC's plans for a ranger program and will keep YAC informed about Woodside's consideration of ranger initiatives.	
(4) YAC queried about the potential impact to marine life.	**(4)** **Woodside assessment:** Woodside accepts that YAC has an interest in the potential impacts on marine life. **Woodside response**: Woodside has undertaken numerous environmental studies that form part of the EPs and has an ongoing commitment to environmental studies and research some of which are set out on Woodside's website. Woodside also committed to ongoing consultation with YAC in relation to environmental impacts including to marine life.	**(4)** Woodside has considered topics raised by YAC and updated Section 4.9 to record these. These are assessed in Section 6.6, 6.7, 6.8 and 6.10 of the EP with appropriate controls implemented.
(5) YAC expressed interest in employment/training opportunities.	**(5)** **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:** Woodside said it would look forward to hearing from YAC about YAC's plans for a ranger program and will keep YAC informed about Woodside's consideration of ranger initiatives and training opportunities.	**(5)** The Program for Ongoing Engagement with Traditional Custodians (Appendix G) includes consideration of programs to support Indigenous Rangers, and support for Indigenous oil spill response capabilities.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with YAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on YAC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.

- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that YAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with YAC in June 2024. Woodside has addressed and responded to YAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked YAC 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 7.2.5 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.

4.10 NATIVE TITLE REPRESENTATIVE BODIES

4.10.1 Kimberley Land Council (KLC)

KLC is the Native Title Representative Body for the Kimberley region of Western Australia. As such, it is not a Prescribed Body Corporate or Registered Native Title Body Corporate but exists to assist Native Title claimants and holders.

Historical engagement:

- **(1)** On 16 February 2023, Woodside emailed the Kimberley Land Council (KLC) following a telephone discussion and provided a forward plan of EPs including three which appear to be in the KLC region and confirming that KLC will facilitate consultation with the Aboriginal corporations it supports (SI Report, reference 39.1).
- **(1)** On 2 November 2023, Woodside emailed KLC confirming that Woodside had attempted to contact relevant Aboriginal corporations via contacts listed by ORIC. Woodside reinforced that it was available to have discussions with each Aboriginal Corporation and would meet their needs regarding dates and locations and funding (SI Report, reference 39.2).

Woodside has been engaging with KLC on behalf of its represented groups as described in relevant sections above.

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed KLC to advise that Woodside would be emailing KLC three separate emails regarding the activity, to be forwarded to the relevant PBCs under KLC's jurisdiction (SI Report, reference 39.3).
- On 19 June 2024, Woodside emailed KLC advising of the proposed activity (Record of Consultation, reference 6.2.44), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that KLC and its members may have within the EMBA, information on how KLC would like to engage, and requested that KLC provide information to other individuals as required.

- On 5 July 2024, Woodside emailed KLC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 39.4). No response has been received.

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with KLC on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) KLC will facilitate consultation with Aboriginal corporations it supports.	**(1)** **Woodside assessment**: Woodside acknowledges that KLC will facilitate consultation with Aboriginal corporations it supports. **Woodside response**: Woodside has consulted with KLC in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation.	**(1)** No additional measures or controls are required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with KLC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on KLC's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that KLC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.

- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with KLC in June 2024. Woodside has addressed and responded to KLC over two months, demonstrating a “reasonable period” of consultation.

Woodside asked KLC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on KLC’s functions, interests, or activities.

4.10.2 Yamatji Marlpa Aboriginal Corporation (YMAC)

YMAC is the Native Title Representative Body (NTRB) for the Yamatji and Pilbara regions. NTRBs exist to provide assistance to native title claimants and holders in regard to their Native Title rights.

Historical engagement:

- On 13 March 2023, Woodside emailed YMAC as to whether YMAC considers itself a ‘relevant person’ under regulation 25(1) of the Environment Regulations for the purposes of consultation on EPs and, if so, whether that relevance is limited to a facilitation function in its capacity as a representative of Traditional Owner groups/corporations that overlap or are adjacent to EMBAs (SI Report, reference 40.1).
- On 15 March 2023, Woodside emailed YMAC requesting a position on whether YMAC considers itself a ‘relevant person’ under the Environment Regulations for the purposes of consultation in EPs (SI Report, reference 40.2).
- **(1)** On 20 March 2023, YMAC replied to confirm that it is a ‘relevant person’ under regulation 25(1) of the Environment Regulations for the purposes of consultation on EPs only in relation to its facilitation and coordination function as a NTRB under applicable federal legislation. YMAC does not intend to provide substantive comment on the content of EPs (SI Report, reference 40.3).
- **(1)** On 20 March 2023, Woodside emailed YMAC with thanks and to advise that this assessment would be included in Woodside’s EPs (SI Report, reference 40.4).
- On 12 June 2023, YMAC emailed Woodside (SI Report, reference 40.5). The email included:
  - **(2)** A proposal to fund in-house expertise to support consultations and administration of the consultation framework.
  - **(2)** A draft consultation framework.
- On 25 July 2023, Woodside emailed YMAC (SI Report, reference 40.6). The email noted:
  - Woodside is open to considering an industry funded position at YMAC to support the work YMAC is facilitating, and Woodside would need to confer with other industry members and discuss with YMAC further.
  - Woodside is supportive of a sustainable consultation framework but is seeking further details.
  - Woodside’s Program for Ongoing Engagement with Traditional Custodians.
  - Woodside’s request to meet with YMAC in relation to a draft consultation framework.
- On 14 December 2023, Woodside emailed YMAC following up on the consultation framework and providing suggestions for content to be included (SI Report, reference 40.7). No response has been received.
- On 21 December 2023, Woodside emailed YMAC providing a list of upcoming activities as requested by YMAC (SI Report, reference 40.8).

- **(2)** On 28 February 2024, Woodside emailed YMAC with a letter setting out the draft terms of an agreement between groups YMAC represents and Woodside (SI Report, reference 40.9). 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, YMAC emailed Woodside acknowledging receipt of the information (SI Report, reference 40.10).
- **(1)** On 11 March 2024, Woodside emailed YMAC requesting details of the appropriate contact person for Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) and attached the Summary Information Sheet (SI Report, reference 40.11).
- **(1)** On 11 March 2024, Woodside emailed YMAC to ask if a previous contact provided for NTGAC was still current for NTGAC (SI Report, reference 40.12).

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed YMAC advising of the proposed activity (Record of Consultation, reference 6.2.45), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that YMAC and its members may have within the EMBA, information on how YMAC would like to engage, and requested that YMAC provide information to other individuals as required.
- On 19 June 2024, Woodside emailed NTGAC (via YMAC) requesting an opportunity to meet with the NTGAC board to discuss EPs relating to the proposed activity and other EPs (SI Report, reference 40.13).
- **(2)** On 27 June 2024, Woodside emailed YMAC seeking an update on the status of YMAC's review of the Consultation Framework Agreement, provided to the organisation on 25 February 2024 (SI Report, reference 40.14). The agreement would be utilised by Nanda Aboriginal Corporation (NAC), Nyangumarta Warrarn Aboriginal Corporation (NWAC) and NTGAC.
- **(2)** On 28 June 2024, YMAC emailed Woodside on behalf of NTGAC and NAC acknowledging the progress made on the plan for consultation and provision of a draft consultation agreement (SI Report, reference 40.15). YMAC requested a Word version of the agreement and advised that it is negotiating dates for NTGAC and NAC boards to meet with Woodside to discuss and finalise the agreement, receive project reports and set a meeting schedule. YMAC also submitted a legal cost estimate for Woodside's consideration.
- **(2)** On 1 July 2024, Woodside emailed YMAC the Word versions of the draft consultation agreement and approved the cost estimate proposed. Woodside stated it looked forward to receiving dates to meet with NTGAC and NAC boards (SI Report, reference 40.16).
- **(2)** On 10 July 2024, YMAC emailed Woodside confirming receipt of the draft agreement to edit with proposed amendments and a date to meet (SI Report, reference 40.17).
- On 16 July 2024, Woodside emailed YMAC a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 40.18).
- On 16 July 2024, Woodside phoned YMAC to confirm the contact details for EP information and inform about the closing dates for consultations. Woodside offered to provide additional information or to consult with Traditional Owners, noting that current consultation activities are part of five-year revisions (SI Report, reference 40.19).
- On 30 July 2024, YMAC emailed Woodside confirming the NTGAC representative's contact details and suggested meeting date for NTGAC (SI Report, reference 40.20).

- **(2)** On 30 July 2024, Woodside emailed YMAC acknowledging the NTGAC meeting date to be confirmed and identifying the Woodside representative to discuss the consultation agreement framework (SI Report, reference 40.21).
- On 31 July 2024, YMAC emailed Woodside acknowledging receipt of email (SI Report, reference 40.22).
- On 31 July 2024, Woodside emailed YMAC accepting NGTAC board offer to meet and offering to provide any information required (SI Report, reference 40.23).

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with YMAC on future opportunities to work with its clients.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) YMAC has provided feedback that in its view it is a 'relevant person' under regulation 25 of the Environment Regulations for the purposes of consultation on EPs only in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation and does not intend to provide substantive comment on the content of EPs.	**(1)** **Woodside assessment**: Woodside accepts YMAC's feedback that it is a relevant person only in relations to its facilitation and coordination function as a representative body. **Woodside response**: Woodside has consulted with YMAC in relation to its facilitation and coordination as a Native Title Representative Body under applicable federal legislation and has accepted YMAC's advice that it does not intend to provide substantive comment on the content of EPs.	**(1)** Not required.
(2) YMAC has provided feedback that it is seeking an industry funded position to support consultations for this and other activities. YMAC has provided a draft consultation framework to assist the consultation process.	**(2)** **Woodside assessment**: Woodside has assessed that its Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with YMAC and/or the groups it represents. **Woodside response**: In February 2024, Woodside sent a draft framework agreement to YMAC as the representative of NTGAC and two other groups. The agreement would frame ongoing consultation, address appropriate support for resourcing, separate from consultation under regulation 25 of the Environment Regulations.	**(2)** Woodside will continue to engage with YMAC in relation to its request for an industry funded position and put a proposal to YMAC in December 2023 for a Framework Agreement, and in February 2024 sent the draft terms of agreement between NTGAC and two other groups represented by YMAC and Woodside. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix G.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 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 Environmental Regulations and consultation with YMAC for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on YMAC's clients' preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that YMAC can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with YMAC in June 2024. Woodside has addressed and responded to YMAC over two months, demonstrating a "reasonable period" of consultation.

Woodside asked YMAC 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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on YMAC's functions, interests, or activities.

4.11 SELF-IDENTIFIED FIRST NATION GROUPS

4.11.1 Ngarluma Yindjibarndi Foundation Ltd

Ngarluma Yindjibarndi Foundation Ltd (NYFL) was created to act as Trustee for the Trust under the *Northwest Shelf Agreement 1998* struck between the Ngarluma and Yindjibarndi registered Native Title claimants, the NWS JVs and Woodside, prior to the resolution of the Ngarluma and Yindjibarndi Native Title claim. Its purpose is to carry on the business of enterprise development, investment and social welfare.

Historical engagement:

- On 19 July 2023, Woodside emailed NFYL NOPSEMA's Consultation Guideline, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also requested that NYFL advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email (SI Report, reference 41.1).
- On 26 July 2023, Woodside emailed NYFL Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 41.2).

- **(1)** On 26 July 2023, NYFL emailed Woodside in response to Woodside's planned Program of Ongoing Engagement with Traditional Custodians (SI Report, reference 41.3). NYFL noted:
  - The agreement was a good start and NYFL was keen to progress discussions with Woodside on the next steps regarding the Program.
  - **(2)** Assistance with resourcing and internal capacity would be required.
- **(1, 2)** On 6 March 2024, NYFL emailed Woodside a letter (SI Report, reference 41.4) setting out the terms on which NYFL consults with industry on EPs. Noting it required resourcing.
- **(1, 2)** On 6 March 2024, Woodside emailed NYFL a letter (SI Report, reference 41.5) setting out the draft terms of an agreement between NYFL 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.
- **(1)** On 14 March 2024, NYFL emailed Woodside acknowledging receipt of the proposed agreement (SI Report, reference 41.5).
- **(2)** On 19 March 2024, NYFL emailed Woodside attaching a quote to review the agreement sent to NYFL on 6 March 2024 (SI Report, reference 41.7).
- **(2)** On 5 April 2024, NYFL emailed Woodside noting it had previously responded to Woodside on 6 March 2024 and noted that Woodside had not responded to its quote to progress a consultation agreement (SI Report, reference 41.8).
- **(1)** On 12 April 2024, NYFL emailed Woodside requesting a response about EP consultation going forward (SI Report, reference 41.9).
- On 12 April 2024, Woodside emailed NYFL acknowledging it had not responded and would respond to NYFL within the week (SI Report, reference 41.10).
- On 17 April 2024, NYFL emailed Woodside noting it was attending to sorry business and as per cultural protocols would require time within the community and engagement would be delayed until appropriate to re-commence (SI Report, reference 41.11).
- **(2)** On 10 May 2024, Woodside emailed NYFL a response to its request for funding to review Woodside's draft consultation agreement and stated that Woodside found the NYFL cost excessive and reiterated its commitment to covering reasonable costs for EP consultation (SI Report, reference 41.12).

Summary of information provided and record of consultation for this EP:

- On 17 June 2024, Woodside emailed NYFL advising of the proposed activity (Record of Consultation, reference 6.2.46), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that NYFL and its members may have within the EMBA, information on how NYFL would like to engage, and requested that NYFL provide information to other individuals as required.
- **(1)** On 17 June 2024, NYFL emailed Woodside acknowledging receipt of the activity's record of consultation and responded in a letter (SI Report, reference 41.13), which outlined the following: In the letter NYFL noted:
  - Woodside had declined to provide funding requested by NYFL to review a proposed consultation agreement.
  - That NYFL maintained that an interim Consultation Agreement remained the appropriate mechanism for consultation between Woodside and NYFL.
  - NYFL is seeking progress of the estimate of costs for the proposed consultation agreement.

- **(1,2)** On 3 July 2024, Woodside emailed NYFL acknowledging the issues raised in the letter dated 17 June 2024. Woodside reassured NYFL that it was fully committed to consulting with NYFL's members and relevant Traditional Owners and would like to arrange a meeting to discuss how Woodside can work with the organisation to effectively engage in consultation and discuss other matters (SI Report, reference 41.14).
- **(2)** On 3 July 2024, NYFL emailed Woodside advising that it has provided Woodside with an estimate of costs to review and progress Woodside's proposed consultation agreement (SI Report, reference 41.15).

Ongoing relationship:

- Woodside continues to pursue an ongoing two-way relationship with NYFL on future opportunities to work together.

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Inclusion in Environment Plan***
(1) NYFL supports a consultation agreement with Woodside.	**(1)** **Woodside assessment**: Separate from consultation under regulation 25 of the Environment Regulations, Woodside is open to engaging with a joint First Nations framework for consultation, however, notes that this is not required to undertake and/or complete consultation in the course of preparing this EP. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff. Woodside has an existing engagement framework in place with NYFL which enables regular (quarterly) communication about Woodside activities. Woodside supports reasonable requests for resourcing. A consultation agreement would be an effective mechanism to address resourcing. **Woodside response**: In March, Woodside sent a draft consultation framework to NYFL.	**(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, (Appendix G). This includes continued engagement regarding the proposed Framework Agreement which would be applied to ongoing consultation for this activity. Woodside will continue to consult following acceptance of the EP, as set out in Section 7.10 of the EP.
(2) NYFL has stated that it requires resourcing for expert advice. It has also provided Woodside with a quote for costs relating to reviewing Woodside's draft consultation agreement.	**(2)** **Woodside assessment:** The draft consultation agreement (See point **(1)** above), would be an effective mechanism to address resourcing for expert advice as agreed between NYFL and Woodside. Woodside supports reasonable requests for resourcing to support consultation. Woodside has reviewed a quote provided by NYFL to review the draft consultation agreement and believes it is excessive. **Woodside response**: Woodside supports reasonable requests to engage experts. Woodside has sought a meeting with NYFL to discuss how Woodside can reasonably ensure NYFL is	**(2)** See point **(1)** above. The proposed agreement may address any reasonable requests for funding.

	adequately resourced for consultation. So far NYFL has declined this invitation.	
While feedback has been received, there were no objections of 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 7.2.5 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 Environmental Regulations and consultation with NYFL for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient information:

- Woodside sought direction on NYFL's preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets to be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that NYFL can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with NYFL in June 2024. Woodside has addressed and responded to NYFL over 2 months, demonstrating a "reasonable period" of consultation.

Woodside asked NYFL 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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NYFL's functions, interests, or activities.

4.12 LOCAL GOVERNMENT AND ELECTED PARLIAMENTARY REPRESENTATIVES, COMMUNITY GROUPS OR ORGANISATIONS

4.12.1 Broome Chamber of Commerce and Industry (Broome CCI)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Broome CCI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Broome CCI, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Broome CCI 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Broome CCI on 18 June 2024 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 Broome CCI with the opportunity to provide feedback over a 2 month period.

4.12.2 Carnarvon Chamber of Commerce and Industry (Carnarvon CCI)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Carnarvon CCI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Carnarvon CCI, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Carnarvon CCI 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Carnarvon CCI on 18 June 2024 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 CCI with the opportunity to provide feedback over a 2 month period.

4.12.3 City of Karratha

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed City of Karratha advising of the proposed activity (Record of Consultation, reference 6.2.2), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to City of Karratha, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 City of Karratha 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to City of Karratha on 19 June 2024 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 City of Karratha with the opportunity to provide feedback over a 2 month period.		

4.12.4 Derby Chamber of Commerce and Industry (Derby CCI)

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed Derby CCI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to Derby CCI, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 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 Derby CCI 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Derby CCI on 18 June 2024 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 Derby CCI with the opportunity to provide feedback over a 2 month period.

4.12.5 East Kimberley Chamber of Commerce and Industry (East Kimberley CCI)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed East Kimberley CCI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- **(1)** On 18 June 2024, East Kimberley CCI emailed Woodside and invited it to the East Kimberley Economic Forum as an opportunity to engage with the community (SI Report, reference 5.1).
- **(1)** On 28 June 2024, Woodside thanked East Kimberley CCI for the response and declined the invitation (SI Report, reference 5.2).
- **(2)** On 10 July 2024, East Kimberley CCI emailed Woodside to offer becoming a member or paying a small advertising fee to facilitate consultation (SI Report, reference 5.3).
- **(2)** On 22 July 2024, Woodside emailed East Kimberley CCI to advise it has directly consulted with stakeholders in the Kimberley and declined the offer (SI Report, reference 5.4).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) Participate in the East Kimberley Economic Forum.	**(1)** **Woodside assessment:** Woodside directly consulted relevant persons in the Kimberley for this EP. **Woodside response:** Woodside declined the invitation.	**(1)** Not required.
(2) Become a member of the CCI or pay an advertising fee for consultation purposes.	**(2)** **Woodside assessment:** Woodside directly consulted with stakeholders in the Kimberley. **Woodside response:** Woodside declined the offer.	**(2)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback	Woodside considers the measures and controls in the EP are appropriate.

	may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with East Kimberley CCI 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to East Kimberley CCI on 18 June 2024 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 East Kimberley CCI over a 2 month period.

4.12.6 Exmouth Community Liaison Group (Exmouth CLG)

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Exmouth CLG advising of the proposed activity (Record of Consultation, reference 6.2.2), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Exmouth CLG, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- On 17 July 2024, Woodside presented to the Exmouth CLG on Woodside activities, including this EP. Woodside presented a slide which listed Environment Plans on which the CLG members had recently been consulted and Environment Plans currently under consultation (SI report, reference 54.1). No feedback was provided on this EP.

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 7.2.5 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Exmouth CLG on 19 June 2024 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 CLG with the opportunity to provide feedback over a 2 month period.

4.12.7 Indian Ocean Territories Regional Development Organisation (IOTRDO)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed IOTRDO advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to IOTRDO, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 IOTRDO 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to IOTRDO on 18 June 2024 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 IOTRDO with the opportunity to provide feedback over a 2 month period.

4.12.8 Karratha Community Liaison Group (Karratha CLG)

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Karratha CLG advising of the proposed activity (Record of Consultation, reference 6.2.2), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Karratha CLG, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.
- On 21 June 2024, Woodside presented to the Karratha CLG on EP consultation requirements and provided an update on upcoming Woodside activities, including this the North Rankin Complex Operations EP (SI report, reference 55.1). No feedback was provided on this EP. Woodside also presented on how Woodside consults relevant persons in the course of preparing our EPs and provided information on relevant persons and EMBA' s. The slides included a QR and URL to Consultation Activities page of the Woodside website and copies of the latest edition of Let's Talk were provided in hard copy and sent electronically with the minutes and pack. No feedback was provided on this EP. 8 CLG members attended the meeting representing:
  - City of Karratha – Council representatives and staff representatives
  - Karratha Central Health Care
  - Dampier Community Association
  - Pilbara Development Commission
  - Department of Education – staff representatives
- On 17 July 2024, Woodside's presentation was emailed to the CLG regardless of their attendance at the meeting.

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
No feedback, 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 7.2.5 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 Karratha 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Karratha CLG on 19 June 2024 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 Karratha CLG with the opportunity to provide feedback over a 2 month period.

4.12.9 Onslow Chamber of Commerce and Industry (Onslow CCI)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Onslow CCI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Onslow CCI, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Onslow CCI 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Onslow CCI on 18 June 2024 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 CCI with the opportunity to provide feedback over a 2 month period.

4.12.10 Port Hedland Chamber of Commerce and Industry (Port Hedland CCI)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Port Hedland CCI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Port Hedland CCI, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Port Hedland CCI 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Port Hedland CCI on 18 June 2024 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 Port Hedland CCI with the opportunity to provide feedback over a 2 month period.

4.12.11 Shire of Ashburton

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Shire of Ashburton advising of the proposed activity (Record of Consultation, reference 6.2.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Shire of Ashburton, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shire of Ashburton on 19 June 2024 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 Ashburton with the opportunity to provide feedback over a 2 month period.

4.12.12 Shire of Broome

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Shire of Broome advising of the proposed activity (Record of Consultation, reference 6.2.2), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- **(1)** On 26 June 2024, Shire of Broome emailed Woodside to confirm it had no comment on the proposal (SI Report, reference 11.1)
- **(1)** On 25 June 2024, Woodside thanked Shire of Broome for its feedback (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) No comment on the proposal.	**(1)** **Woodside assessment:** Woodside noted Shire of Broome's feedback. **Woodside response**: Woodside thanked the Shire of Broome for its feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.
Outcomes of Consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Shire of Broome 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Shire of Broome on 19 June 2024 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 Broome over a 2 month period.		

4.12.13 Shire of Carnarvon

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed Shire of Carnarvon advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 11 July 2024, Woodside sent an email reminder to Shire of Carnarvon, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 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 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Shire of Carnarvon on 18 June 2024 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 2 month period.		

4.12.14 Shire of Cocos (Keeling) Islands

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed Shire of Cocos (Keeling) Islands advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to Shire of Cocos (Keeling) Islands, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 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 Shire of Cocos (Keeling) Islands 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shire of Cocos (Keeling) Islands on 18 June 2024 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 Cocos (Keeling) Islands with the opportunity to provide feedback over a 2 month period.

4.12.15 Shire of Derby/West Kimberley

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Shire of Derby/West Kimberley advising of the proposed activity (Record of Consultation, reference 6.2.2), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- **(1)** On 26 June 2024, Shire of Derby/West Kimberley emailed Woodside to confirm it has no specific comments on the EP (SI Report, reference 12.1)
- **(1)** On 25 June 2024, Woodside thanked Shire of Derby/West Kimberley for its feedback (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) No comment on the EP.	**(1)** **Woodside assessment:** Woodside noted Shire of Derby/West Kimberley feedback. **Woodside response**: Woodside thanked the Shire of Derby/West Kimberley for its feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP 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 Shire of Derby/West Kimberley 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shire of Derby/West Kimberley on 19 June 2024 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 Derby/West Kimberley over a 2 month period.

4.12.16 Shire of Exmouth

Summary of information provided and record of consultation for this EP:

- On 19 June 2024, Woodside emailed Shire of Exmouth advising of the proposed activity (Record of Consultation, reference 6.2.2), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Shire of Exmouth, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shire of Exmouth on 19 June 2024 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 2 month period.

4.12.17 Shire of Wyndham-East Kimberley

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Shire of Wyndham-East Kimberley advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Shire of Wyndham-East Kimberley, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Shire of Wyndham-East Kimberley 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Shire of Wyndham-East Kimberley on 18 June 2024 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 Wyndham-East Kimberley with the opportunity to provide feedback over a 2 month period.

4.12.18 Town of Port Hedland

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Town of Port Hedland advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Town of Port Hedland, following up on the proposed activity (Record of Consultation, reference 2.1) and included a link to the Consultation Information Sheet on Woodside's website.
- **(1)** On 15 July 2024, Town of Port Hedland emailed Woodside to advise it had no comments on the proposal (SI Report, reference 46.1).
- **(1)** On 25 June 2024, Woodside thanked Town of Port Hedland for its feedback (SI Report, reference 46.2).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) No comments on the proposal.	**(1)** **Woodside assessment:** Woodside noted Town of Port Hedland had no comments. **Woodside response:** Woodside thanked Town of Port Hedland for its feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Town of Port Hedland 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Town of Port Hedland on 18 June 2024 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 Town of Port Hedland over a 2 month period.

4.13 OTHER NON-GOVERNMENT GROUPS OR ORGANISATIONS (NGOs)

4.13.1 Friends of Australian Rock Art (FARA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed FARA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to FARA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 FARA 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to FARA on 18 June 2024 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 FARA with the opportunity to provide feedback over a 2 month period.

4.13.2 Save Our Songlines

Historical engagement:

- On 25 July 2023, Woodside met with Environmental Defenders Office (EDO), Save our Songlines (SoS), and/or [Individual 1] about an activity not relevant to this activity (SI Report, reference 42.1). During the meeting, SoS and/or [Individual 1] stated that they are broadly concerned about:

- **(1)** Impacts on whales and other animals.
- **(2)** The Songlines (unspecified) and the energy lines (unspecified).

- **(3)** On 25 July 2023, EDO on behalf of SoS, and/or [Individual 1] emailed Woodside in response to another activity not related to this activity requesting a response to questions relating to the depth of wells, freshwater, migratory patterns of whales, dugongs and turtles, and seagrass distribution (SI Report, reference 42.2).
- **(1, 3)** On 27 July 2023, Woodside responded to EDO's email of 25 July 2023 in relation to another activity providing information in response to the interest SoS, and/or [Individual 1] had in marine mammals, seagrass, and the meeting of saltwater and freshwater (SI Report, reference 42.3).
- **(2)** From 2022 to 2023, Woodside consulted SoS and /or [Individual 1] on the Scarborough D&C and Pluto EPs. A number of issues raised by SoS during consultation on those EPs was addressed and responded to, which Woodside considers relevant to this EP, including:
  - Acknowledged [Individual 1] was a Mardudhunera person, a Traditional Custodian of Murujuga and opposed to industry at Murujuga.
  - The management of emissions under a range of Federal and State legislation and Woodside's support of the monitoring of emissions in relation to rock art.
  - The assessment of emissions and the controls in EPs to reduce GHG emissions to ALARP and acceptable levels.
  - The commitment to facilitating access to Murujuga to Traditional Custodians.
  - The consideration of climate change impacts through the assessment of GHG emissions.
  - The consideration of tangible and intangible heritage in EPs.
  - Woodside's efforts to understand and record the nature of the cultural values provided through consultation.
  - Woodside's willingness to consult with Traditional Custodians, including those who self-identify as relevant.
  - That consultation of relevant persons needs to be consistent.
  - That the environment and cultural values are one, that Dreaming stories come from the animals depicted on the rock art and will live forever, that the connection and songlines are being disrupted.

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed SoS and/or [Individual 1] advising of the proposed activity (Record of Consultation, reference 6.2.47), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that SoS and/or [Individual 1] and its members may have within the EMBA, information on how SoS and/or [Individual 1] would like to engage and requested that SoS provide information to other individuals as required.
- On 12 July 2024, Woodside emailed SoS and/or [Individual 1] a reminder about the proposed activity, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report, reference 42.4). No response has been received.

Ongoing relationship:

- Woodside has continued consultation with SoS and/or [Individual 1] on other activities unrelated to this EP.

Summary of Feedback, Objection or Claim	*Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response*	*Inclusion in Environment Plan*
(1) In a previous unrelated EP, cultural features associated with whales was raised.	**(1)**	**(1)** Assessment of potential impacts to cultural values are described in Section 6.10 of the EP.

	Woodside Assessment: Woodside understands that some species hold spiritual and cultural importance to SoS and/or [Individual 1]. **Woodside Response**: During consultation on a previous EP, Woodside discussed controls put in place to manage impacts and risks relating to their spiritual and cultural connection to the environment. Woodside has implemented controls to reduce potential risks and impacts to ecological and cultural values to ALARP and to an acceptable level.	
(2) In a previous unrelated EP, it was noted there were cultural features associated with Songlines, dreaming and energy lines.	**(2)** **Woodside Assessment**: Woodside understands that Songlines and energy lines to hold personal spiritual and cultural value individually (rather than communally) to SoS and/or [Individual 1]. Woodside has consistently sought to understand the nature of these values to ensure impacts to these values can be minimised. SoS and/or [name redacted] has declined to provide further information on these values. **Woodside Response**: In any event, Woodside has sought to include controls that seek to reduce risks and impacts to ALARP and acceptable levels.	**(2)** Woodside has considered SoS's and/or [Individual 1] feedback and updated Section 4.9.4 to record topics of interest and cultural values, including Songlines and energy lines. These are assessed in Section 6.10 under Songlines with appropriate controls implemented. At this stage, Woodside has not been provided with specific information on these potential values to enable a more fulsome assessment.
(3) In a previously unrelated EP, an interest in marine mammals, seagrass, and the meeting of freshwater and saltwater was demonstrated.	**(3)** **Woodside Assessment**: SoS and/or [Individual 1] has not expressly confirmed their interests, rather, have raised topics of interest to them during consultation for another activity. Woodside has considered SoS's and/or [Individual 1] topics of interest and shared relevant information in relation to a previous EP, with SoS and/or [Individual 1] relating to these interests, including controls put in place to manage risks and impacts to them. **Woodside Response**: Woodside has updated Section 4.9 to record the interests and assessed them in Section 6.10 implementing appropriate controls.	**(3)** Woodside has considered topics raised by SoS and/or [Individual 1] and updated Section 4.9 to record these. These are assessed in 6.10 with appropriate controls implemented.
Woodside has addressed objections and claims as noted above.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.5 of this EP).	Woodside has assessed the objections or claims raised by SoS and/or [Individual 1]. No additional measures or controls are required.

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation with SoS and/or [Individual 1] for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information:

- Woodside sought direction from SoS and/or [Individual 1] as to their preferred method of consultation. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 25 of the Environment Regulations consultation.
- Woodside articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Woodside confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Woodside asked for the consultation and information sheets be distributed to members and individuals as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Woodside advised that SoS and/or [Individual 1] can request that particular information provided in the consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period:

- Consultation Information Sheet publicly available on the Woodside website since June 2024.
- Woodside published advertisements in national, state, and relevant local newspapers advising of the proposed activities and requesting feedback.
- Woodside commenced consultation with SoS and/or [Individual 1] in June 2024. Woodside has addressed and responded to SoS and/or [Individual 1] over 2 months, demonstrating a "reasonable period" of consultation.

Woodside asked SoS and/or [Individual 1] if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.

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 7.2.5 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on SoS and/or [Individual 1] functions, interests, or activities.

4.13.3 Telstra

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Telstra advising of the proposed activity (Record of Consultation, reference 6.2.4), provided a Consultation Information Sheet, a submarine cables map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Telstra, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 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 Telstra 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Telstra on 18 June 2024 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 Telstra with the opportunity to provide feedback over a 2 month period.

4.13.4 Vocus

Summary of information provided and record of consultation for this EP:

- On 18 July 2024, Woodside emailed Vocus advising of the proposed activity (Record of Consultation, reference 6.2.4.1), provided a Consultation Information Sheet, a submarine cables map and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- **(1)** On 22 July 2024, Vocus emailed Woodside to advise it has no concerns regarding the activity (SI Report, Reference 51.1).

• (1) On 23 July 2024, Woodside thanked Vocus for its feedback (SI Report, reference 51.2).		
Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) No concerns regarding the activity.	**(1)** **Woodside assessment:** Woodside noted Vocus has no concerns regarding this activity. **Woodside response:** Woodside thanked Vocus for its feedback.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.
Outcomes of Consultation		
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Vocus 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to Vocus on 18 July 2024 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 Vocus over a 1 month period.		

4.14 RESEARCH INSTITUTES AND LOCAL CONSERVATION GROUPS OR ORGANISATIONS

4.14.1 Cape Conservation Group (CCG)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed CCG advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*

• On 11 July 2024, Woodside sent an email reminder to CCG, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 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 CCG 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 Friday 14 June 2024. • Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback. • Consultation Information provided to CCG on 18 June 2024 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 CCG with the opportunity to provide feedback over a 2 month period.		

4.14.2 Protect Ningaloo

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed Protect Ningaloo advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*. • On 11 July 2024, Woodside sent an email reminder to Protect Ningaloo, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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	No additional measures or controls are required.

	appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP).	

Outcomes of Consultation

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and consultation with Protect Ningaloo 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 Friday 14 June 2024.
- Woodside published advertisements in a national, state and relevant local newspapers advising of the proposed activities and requesting feedback.
- Consultation Information provided to Protect Ningaloo on 18 June 2024 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 Protect Ningaloo with the opportunity to provide feedback over a 2 month period.

5. TABLE 3: ENGAGEMENT REPORT WITH PERSONS OR ORGANISATIONS ASSESSED AS NOT RELEVANT

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 3 denotes an item raised by a stakeholder. The green numbering **(N)** in this section denotes Woodside's response to that item.

5.1 COMMONWEALTH AND WA STATE GOVERNMENT DEPARTMENTS OR AGENCIES – MARINE

5.1.1 Port of Cocos (Keeling) Islands (PCI)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed PCI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to PCI, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

- While PCI 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 PCI to provide feedback during the consultation process.

5.2 TRADITIONAL CUSTODIANS AND NOMINATED REPRESENTATIVE CORPORATIONS

5.2.1 Walalakoo Aboriginal Corporation

Historical engagement:

- Between 3 – 26 April 2024, Woodside made a number of attempts to contact Walalakoo via telephone and text message to advise that Woodside would be visiting the Kimberley region and would like to meet in Broome or Derby to discuss activities and EPs. On the 10 April 2024, Woodside visited the Walalakoo office, which was unattended (SI Report, reference 44.1).

• On 10 May 2024, Woodside informed KLC that it had been unable to contact Walalakoo by phone or text message and that on two occasions when visiting Derby, the Walalakoo office was closed. KLC confirmed the Walalakoo contact number was correct and provided an alternative contact number (SI Report, reference 44.2). **Summary of information provided and record of consultation for this EP:** • On 18 June 2024, Woodside emailed Walalakoo Aboriginal Corporation (Walalakoo) advising of the proposed activity (Record of Consultation, reference 6.2.49), providing a Summary Information Sheet (including a link to the detailed information sheet on Woodside's website), and links to the NOPSEMA consultation brochure and guidelines, and draft policy for managing gender-restricted information. The email requested information on the interests that Walalakoo and its members may have within the EMBA, information on how Walalakoo would like to engage, and requested that Walalakoo provide information to other individuals as required. • On 15 July 2024, Woodside emailed Walalakoo a reminder about the proposed activity and to offer an opportunity to discuss the activity further, including a reference to the original Record of Consultation email. Woodside provided contact details to submit feedback, as well as confirming a date to submit feedback about the activity (SI Report reference, 44.3). No response has been received.		
Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its 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 7.2.5 of this EP).	No additional measures or controls are required.
Outcomes of Consultation		
While Walalakoo 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 Walalakoo to provide feedback during the consultation process.		

5.3 OTHER NON-GOVERNMENT GROUPS OR ORGANISATIONS (NGOs)

5.3.1 350 Australia (350A)

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed 350A advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to 350A, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 of this 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.		

5.3.2 Australian Conservation Foundation (ACF)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed ACF advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to ACF, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.
Outcomes of Consultation		
While ACF is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ACF to provide feedback during the consultation process.		

5.3.3 Australian Marine Conservation Society (AMCS)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed AMCS advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to AMCS, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

While AMCS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AMCS to provide feedback during the consultation process.

5.3.4 Australasian Centre for Corporate Responsibility (ACCR)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed ACCR advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to ACCR, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

While ACCR is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ACCR to provide feedback during the consultation process.

5.3.5 Conservation Council of Western Australia (CCWA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed CCWA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to CCWA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

- While CCWA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for CCWA to provide feedback during the consultation process.

5.3.6 Doctors for the Environment Australia (DEA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed DEA advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to DEA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.
Outcomes of Consultation		
While DEA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for DEA to provide feedback during the consultation process.		

5.3.7 Environs Kimberley

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Environs Kimberley advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Environs Kimberley, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.
Outcomes of Consultation		
While Environs Kimberley 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 Environs Kimberley to provide feedback during the consultation process.		

5.3.8 Greenpeace Australia Pacific (GAP)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed GAP advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to GAP, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

While GAP is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for GAP to provide feedback during the consultation process.

5.3.9 Market Forces

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Market Forces advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to Market Forces, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation
While Market Forces is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Market Forces to provide feedback during the consultation process.

5.4 OTHER

5.4.1 Individual

Summary of information provided and record of consultation for this EP:

- **(1)** On 21 June 2024, a member of the public emailed Woodside to express interest in finding out more about this EP (SI Report, reference 8.1).
- (1) On 25 June 2024, Woodside thanked the individual for its email and provided information about this EP (SI Report, reference 8.2).

Summary of Feedback, Objection or Claim	*Assessment of Merits of Feedback, Objection or Claim and Woodside's Response*	*Inclusion in Environment Plan*
(1) Request for information on this EP.	**(1)** **Woodside assessment:** Woodside is willing to provide information on this EP to interested individuals. **Woodside response:** Woodside provided information on this EP.	**(1)** Not required.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.

Outcomes of Consultation
While this individual is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period to provide feedback during the consultation process.

5.5 RESEARCH INSTITUTES AND LOCAL CONSERVATION GROUPS OR ORGANISATIONS

5.5.1 Australian Institute of Marine Science (AIMS)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed AIMS advising of the proposed activity (Record of Consultation, reference 6.2.14), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 21 June 2024, AIMS emailed Woodside (SI Report, reference 1.1) and:
  - **(1)** confirmed it has no concerns regarding the activities.
  - **(2)** requested appropriate communications to be conducted with vessels.
- **(1,2)** On 4 July 2024, Woodside thanked AIMS for its feedback and confirmed vessels will comply with marine orders for safe vessel operations (SI Report, reference 1.2).

Summary of Feedback, Objection or Claim	***Assessment of Merits of Feedback, Objection or Claim and Woodside's Response***	***Inclusion in Environment Plan***
(1) No operational concerns regarding the activities.	**(1)** **Woodside assessment:** Woodside noted AIMS feedback. **Woodside response:** Woodside thanked AIMS for confirming it has no concerns regarding the activities.	**(1)** Not required.
(2) Vessel communication.	**(2)** **Woodside assessment:** Section 6.6.1 of the EP outlines anti-collision measures for safe vessel operations. **Woodside response:** Woodside confirmed vessels will comply with marine orders for safe vessel operations.	**(2)** Refer to Section 6.6.1 of the EP.
While feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see section 7.2.5 of this EP of this EP).	Woodside considers the measures and controls in the EP are appropriate.
Outcomes of Consultation		

• While AIMS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AIMS to provide feedback during the consultation process.

5.5.2 Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed CSIRO advising of the proposed activity (Record of Consultation, reference 6.2.14), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to CSIRO, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 of this 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.		

5.5.3 Western Australian Marine Science Institution (WAMSI)

Summary of information provided and record of consultation for this EP: • On 18 June 2024, Woodside emailed WAMSI advising of the proposed activity (Record of Consultation, reference 6.2.1), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.* • On 11 July 2024, Woodside sent an email reminder to WAMSI, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.		
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 7.2.5 of this EP).	No additional measures or controls are required.
Outcomes of Consultation		
• While WAMSI is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for WAMSI to provide feedback during the consultation process.		

5.5.4 University of Western Australia (UWA)

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed UWA advising of the proposed activity (Record of Consultation, reference 6.2.14), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community.*
- On 11 July 2024, Woodside sent an email reminder to UWA, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this 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.		

5.5.5 Curtin University

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Curtin University advising of the proposed activity (Record of Consultation, reference 6.2.14), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Curtin University, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

- While Curtin University is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Curtin University to provide feedback during the consultation process.

5.5.6 Murdoch University

Summary of information provided and record of consultation for this EP:

- On 18 June 2024, Woodside emailed Murdoch University advising of the proposed activity (Record of Consultation, reference 6.2.14), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure *Consultation on offshore petroleum environment plans: Information for the community*.
- On 11 July 2024, Woodside sent an email reminder to Murdoch University, following up on the proposed activity (Record of Consultation, reference 6.2.50) and included a link to the Consultation Information Sheet on Woodside's website.

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 7.2.5 of this EP).	No additional measures or controls are required.

Outcomes of Consultation

- While Murdoch University is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Murdoch University to provide feedback during the consultation process.

6. RECORD OF CONSULTATION

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6.1.1 Consultation Information Sheet

Woodside Energy

CONSULTATION

INFORMATION SHEET

June 2024

NORTH RANKIN COMPLEX OPERATIONS ENVIRONMENT PLAN

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside Energy Ltd (Woodside) consults relevant persons in the course of preparing an environment plan (EP) to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that could be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. This is the intended outcome of consultation.

Woodside's aim is to ensure the activity is carried out in a manner that is consistent with the principles of ecologically sustainable development (ESD), by which the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and of an acceptable level. We want relevant persons whose functions, interests or activities that may be affected by the proposed activity to have the opportunity to provide feedback on our proposed activity, in accordance with the intended outcome of consultation.

Overview

Woodside is submitting a five-year revision of the Operations EP for the North Rankin Complex (NRC) facility and associated subsea infrastructure in Commonwealth waters, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth) (regulations). The EP covers the NRC facility, which is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The EP also covers two trunklines (1TL and 2 TL) that transports hydrocarbons from the NRC facility to the Karratha Gas Plant for processing.

Location and Operations

The NRC facility is located in Production License WA-1-L and the export pipelines (trunklines) in Pipeline Licenses WA-1-PL and WA-10-PL (see **Figure 1**). The NRC facility is in Commonwealth waters on the North West Shelf approximately 135 km north-west of Dampier in 125 m of water.

The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure. The produced gas and condensate from the facility is exported via two 130 km trunklines for processing at the Karratha Gas Plant.

Activity Overview

Woodside plans to continue producing hydrocarbons at the NRC facility and includes the following main activities to be undertaken during the next five-year operational period:

- Routine dry gas and condensate production, including processing, exportation and associated activities;
- Routine inspection, monitoring, maintenance and repair (IMMR) activities of the NRC facility and associated subsea infrastructure.

Decommissioning is not planned during the next five years. Any wells or production systems that reach end of useful life will be the subject of a separate future EP.

Production

The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

Inspection

Inspection of subsea infrastructure is the process of physical verification and assessment of subsea components 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 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. Typical subsea repair activities include subsea control module replacement, riser or flowline replacement, scour prevention installation, and corrosion protection.

Support Vessels

Vessels will be used to support the NRC facility, undertake inspection, monitor, maintenance and repair of subsea infrastructure and to carry out standby duties during helicopter operations. An accommodation vessel may also be required for short periods for planned maintenance campaigns.

Support vessels will operate on dynamic positioning (DP) or potentially moored in the case of a semi-submersible accommodation support vessel. However, vessels are equipped with an anchor to be deployed in the event of an emergency.

Support vessels visit the facility on average once a week. Approximately 14 helicopter trips per fortnight are undertaken.

Table 1 provides a summary of the activities to be managed under the NRC Operations EP.

Table 2 provides the approximate locations of key infrastructure related to the North Rankin Complex.

Communications with mariners

The location of the NRC facility is marked on nautical charts and the platforms are surrounded by a 500 m radius petroleum safety zone (PSZ).

The Petroleum Activity Area (PAA) consists of two Operational Areas:

1. The Export Trunkline Operational Area is:
   - An area within 1500 m of 1TL and 2TL (between the NRC and the State waters boundary).
2. The Offshore Facility Operational Area includes:
   - An area within a 500 m radius around the NRC platforms.
   - An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL).
   - An area within 1500 m of Persephone (PSP) subsea infrastructure.

1 North Rankin Complex Operations Environment Plan | June 2024

Commercial fishers and other marine users are permitted to use the Operational Areas but are prohibited from entering the PSZ unless authorised by Woodside to avoid interactions between vessels and the NRC facility operations. All wells will continue to be marked on navigational charts.

Assessment

Woodside has undertaken an assessment of the potential impacts and risks to the environment as well as to potential risks to relevant persons arising from the planned activities as well as unplanned events. This assessment considers the timing, duration, and location of the activities.

Mitigation and management measures that will be implemented and are summarized in **Table 3**. Further details will be provided in the EP.

In preparing the EP, the intent is to minimise environmental, social and cultural impacts associated with the proposed activities and Woodside seeks your feedback to inform our decision making.

Joint Venture

Woodside Energy Ltd is the Titleholder for this activity on behalf of its joint venture partners, Shell Australia Pty Ltd, BP Developments Australia Pty Ltd, Chevron Australia Pty Ltd, CNOOC NWS Private Ltd, and Japan Australia LNG (MIMI) Pty Ltd.

We welcome your feedback by 19 July 2024.

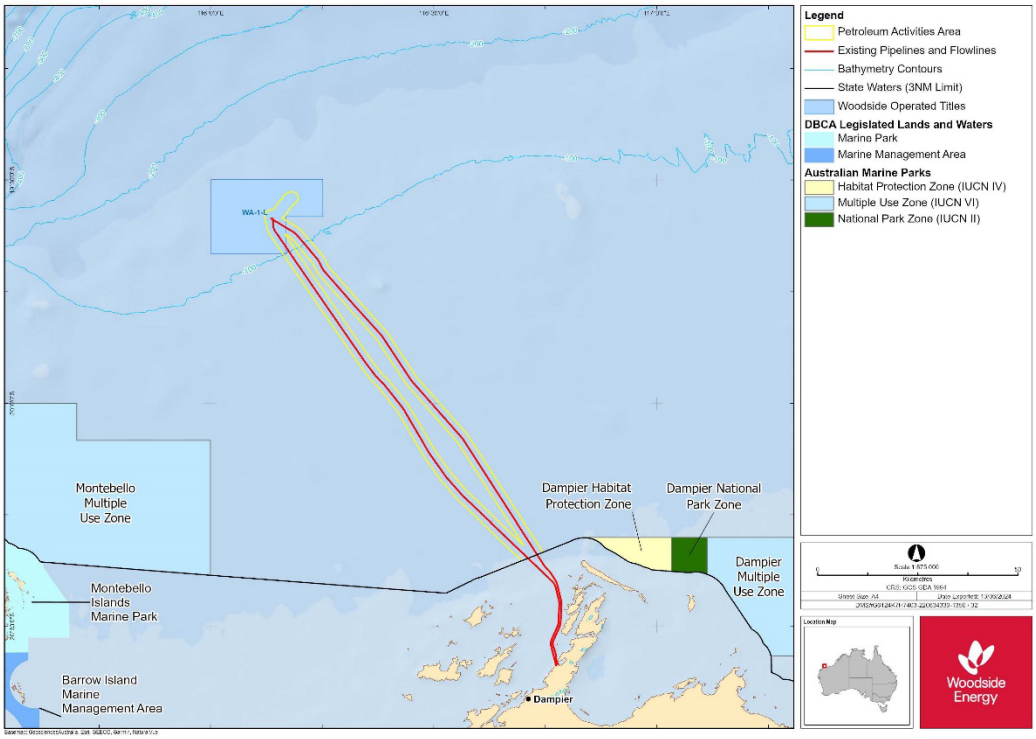


Figure 1: North Rankin Complex Operational Areas

Table 1. Activity Summary

North Rankin Complex Operations Environment Plan	
Facility type	Single integrated facility of two platforms (North Rankin A platform and North Rankin B platform)
Production License Areas	WA-1-L
Pipeline Licenses	WA-1-PL, WA-10-PL.
Approximate water depth	~ 30 – 125 m
Activities Summary	• Routine production. • Routine IMMR of the platforms and associated subsea infrastructure. • Platform well intervention, workovers and well control activities. • Well clean-up. • Non-routine and unplanned activities and incidents associated with the above.
Infrastructure	• Single integrated facility of two platforms including platform based wells. • Two export trunklines running from the NRC to the State waters boundary. • Two subsea Xmas trees, a manifold, a flowline and umbilicals associated with the Persephone reservoir subsea wells.
Vessels	Platform support vessels, subsea support vessels, possible accommodation support vessels and others appropriate to nature of petroleum activities.
Key dates	• Production commenced: 1984 • Routine operations: Ongoing • Estimated End of Field life: operational until at least 2036/37
Approximate duration	Operation of the NRC facility occurs 24 hours a day, 365 days a year. Temporary IMMR activities also occur as required to support day-to-day operations. The duration of IMMR activities are typically in the order of days to weeks. The End of Field Life of the NRC facility is not predicted during the life of this EP. Future decommissioning or drilling will be subject to a separate EP.
Operational Areas and Exclusion zones	The Petroleum Activities Area, delineating the spatial extent of the Petroleum Activities Program, consists of two Operational Areas: 1. The Export Trunklines Operational Area which includes an area within 1500 m of 1TL and 2TL (between the NRC and the State waters boundary). 2. The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC platforms; • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL); and • An area within 1500 m of Persephone (PSP) subsea infrastructure.
Distance to nearest town	~ 135 km north-west of Dampier
Distance to nearest marine park/nature reserve	The closest marine park to the NRC facility operational area is Montebello Marine Park, which is ~ 58 km from the PAA. The closest marine park to the trunkline operational area is Dampier Marine Park, which is ~ 7 km from the PAA.

Table 2. Approximate locations of key infrastructure related to the North Rankin Complex Operations Petroleum Activities Program

Structure	Approximate Water depth (m)[1]	Latitude	Longitude	Petroleum Titles
Platforms				
North Rankin A (NRA) Platform	125	19° 35' 03.23" S	116° 08' 17.06'E	WA-1-L
North Rankin B (NRB) Platform	125	19° 35' 02.52" S	116° 08' 11.32'E	WA-1-L
Export Trunklines				
Export Trunkline 1TL start (at platform)	125	19° 35' 03.12" S	116° 08' 19.88" E	WA-1-PL
Export Trunkline 1TL end (at State waters boundary)	30	20° 20' 49.49" S	116° 42' 40.80" E	WA-1-PL
Export Trunkline 2TL start (at platform)	125	19° 35' 07.94" S	116° 08' 05.06" E	WA-10-PL
Export Trunkline 2TL end (at State waters boundary)	30	20° 20' 20.26" S	116° 43' 54.17" E	WA-10-PL
Subsea Infrastructure				
Persephone flowline start (at PSA02 well)	125	19°32'24.30"S	116°10'49.96"E	WA-1-L
Persephone flowline end (at platform)	125	19° 35' 03.23" S	116° 08' 17.06'E	WA-1-L
Subsea Wells				
PSA01 Well	125	19°32'25.02"S	19°32'25.02"S	WA-1-L
PSA02 Well	125	19°32'24.30"S	116°10'49.96"E	WA-1-L
Platform Wells				
22 platform wells from the North Rankin reservoir	125	19° 35' 03.23" S	116° 08' 17.06'E	WA-1-L
7 platform wells from the Perseus reservoir	125	19° 35' 03.23" S	116° 08' 17.06'E	WA-1-L

1 Approximate mean surface level

Environment That May Be Affected (EMBA)

The EMBA is the largest spatial extent where the NRC Operations EP activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities. For this EP, the EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modeling scenarios that inform the EMBA are well or subsea loss of containment. The EMBA is depicted in **Figure 2**.

The EMBA does not represent the extent of the predicted impact of the highly unlikely unplanned release of hydrocarbons. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, depending on the weather and ocean conditions at the time of the release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known at the time of the release.

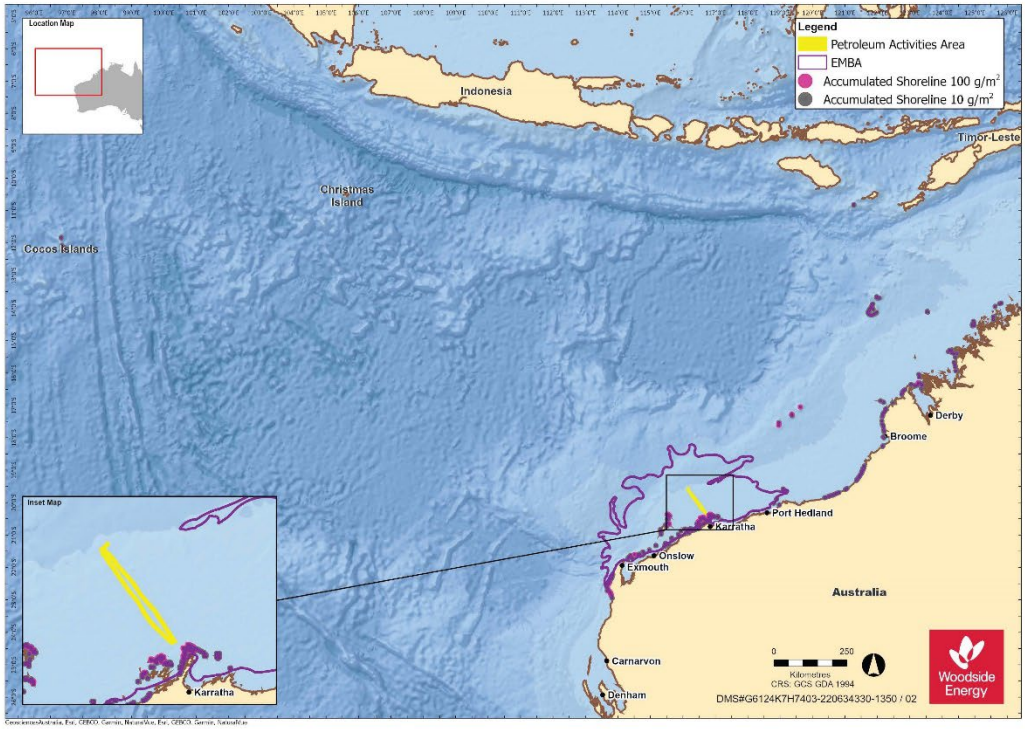


Figure 2: Environment that May Be Affected (EMBA) by the North Rankin Complex Operations Petroleum Activities Program

Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the proposed activities considering timing, duration, location. A number of mitigation and management measures for proposed activities are outlined in **Table 3**. Further details will be provided in the EP.

Table 3. Summary of key risks and/or impacts and management measures associated with North Rankin Complex Operations.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Planned Activities (Routine and Non-routine)			
Physical Presence: Interaction with Other Marine Users	• Presence of NRC platforms and subsea infrastructure excluding and/or displacing other users from Petroleum Safety Zone and Operational Areas respectively.	• Potential isolated social impact resulting from interference with other sea users (e.g. commercial and recreational fishing, and shipping).	• Maintain a permanent 500m PSZ around the platforms. • Vessels adhere to regulatory requirements for navigational safety. • Notifying the Australian Hydrographic Office (AHO) of location of permanent new infrastructure to enable update of maritime charts. • Consult with relevant persons so that they are informed of the proposed activity.
Physical Presence: Disturbance to Seabed	• Presence of NRC and subsea infrastructure modifying marine habitats. • Subsea operations, inspection, maintenance and repair activities resulting in disturbance to seabed.	• Localised modification of seabed habitat (formation of artificial reef) within Operational Area with no lasting effect. • Localised modification of seabed habitat within Operational Area.	• Anchoring within the PSZ is prohibited except in emergency situations or under issuing of a specific permit. • Monitoring and maintenance of all subsea infrastructure will be completed as per IMMR process.
Routine Acoustic Emissions: Generation of Noise during Routine Operations	Noise generated within the Operational Area from: • facility and associated infrastructure • vessel and subsea IMMR activities • helicopters.	• Localised behavioural impacts to marine fauna around and within the Operational Area with no lasting effect.	• Comply with regulatory requirements to limit interaction with marine fauna.
Routine and Non-Routine Discharges: Subsea Operations and Activities	• Discharge of subsea control fluids. • Discharge of hydrocarbons remaining in subsea pipework and equipment as a result of subsea intervention works. • Discharge of chemicals remaining in subsea pipework and equipment or the use of chemicals for subsea IMMR activities. • Discharge of minor fugitive hydrocarbon/chemicals from subsea equipment.	• Localised decrease in water quality around subsea system within Operational Area with no lasting effect. • Potential localised decrease in water quality at release location during IMMR activities with no lasting effect. • Localised decrease in water quality at release location during IMMR activities with no lasting effect. • Potential localised decrease in water quality around subsea system within Operational Area with no lasting effect.	• Marine discharges will be managed according to regulatory requirements. • Chemicals selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Monitor subsea control fluid use, investigating material discrepancies to support identification of potential integrity failures.
Routine and Non-Routine Discharges: Produced Water	• Discharge of produced water from the facility.	• Slight short-term, localised decrease in water quality, marine sediments and marine biota.	• Marine discharges will be managed according to regulatory requirements. • Chemicals selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Online monitoring and procedural controls in place to monitor and control produced water discharge volume and oil in water (OIW) concentrations and prevent discharge of produced water with high OIW concentrations. • Routine chemical and ecotoxicity testing of produced water to assess environmental impact and allow for implementation of adaptive management.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Routine and Non-Routine Marine Wastewater Discharges: Utility Systems and Drains	• Discharge of sewage, grey water and putrescible waste from vessels and NRC to the marine environment. • Discharge of deck, bilge and drain water from vessels and NRC to the marine environment. • Discharge of reverse osmosis brine from vessels and NRC to the marine environment. • Discharge of cooling water from vessels and NRC to the marine environment.	• Localised decrease in water quality (increased nutrients and biological oxygen demand) with no lasting effect. • Localised decrease in water quality at the discharge location with no lasting effect. • Localised decrease in water quality at the discharge location with no lasting effect. • Localised increase in salinity at the discharge location with no lasting effect.	• Marine discharges managed according to regulatory requirements. • Chemicals selected with the lowest reasonably practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Putrescible waste and sewage will be macerated before discharged.
Routine and Non-routine Atmospheric and Greenhouse Gas (GHG) Emissions: Fuel combustion, Flaring and Fugitives	• Direct emissions (Scope 1 and 2) associated with NRC fuel combustion and exhaust emissions, operational flaring and fugitive emissions, and vessel emissions (including incinerators). • Consideration of indirect (Scope 3) emissions associated with onshore processing, third party transportation, regassification and combustion by end users.	• Potential localised decrease in air quality due to direct emissions, limited to the airshed local to the facility. • Emissions associated with gas processing onshore (considered as indirect impacts) could result in temporary, localised reductions in air quality and are linked to concerns from some stakeholders that these emissions may lead to potential impacts on rock art. • Direct and indirect GHG emissions.	• Comply with legislative and regulatory requirements for marine air pollution, emissions (including NGERS and NPI) reporting and air emissions management. • Apply for and manage net direct and indirect GHG emissions to within the relevant baseline under the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015. • Forecast, measure, monitor and estimate facility GHG emissions to inform optimisation management practices and minimise environmental impact of direct NRC and indirect onshore processing emissions. • Comply with legislative and regulatory requirements applicable to onshore gas processing, including operational licences, Ministerial Conditions and associated management plans covering greenhouse gas emissions, air quality, and cultural heritage • Monitor market developments related to the contribution of natural gas in the energy transition.
Routine Light Emissions: Light Emissions from Platform, Vessel Operations and Operational Flaring	• Light emissions from NRC and vessels. • Light emissions from NRC during flaring.	• Localised potential for behavioural disturbance of species in close proximity to riser platform and vessels with no lasting effect.	• Lighting limited to the minimum required for navigational and safety requirements, except for emergency events.
Unplanned Events (Accidents / Incidents)			
Unplanned Hydrocarbon or Chemical Release: Hydrocarbon Release During Bunkering/ Refuelling and Chemical Release During Transfer, Storage and Use	• Accidental release of hydrocarbons to the marine environment during bunkering. • Accidental discharge of chemicals to the marine environment during transfer, storage or use.	• Potential minor short-term disruption to marine fauna, including protected species and/or localised impacts to water quality. • Potential slight short-term impacts to the marine fauna, and localised temporary impacts to water quality and marine sediments.	• Contract vessels to comply with regulatory requirements for safe vessel operations and to reduce the risk of accidental hydrocarbon release during vessel operations and transfer. • Implementation of bunkering procedures. • Safe storage of chemicals and diesel to prevent discharge.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Unplanned Discharges: Hazardous and Waste Management	• Incorrect disposal or accidental discharge of non hazardous and hazardous waste to the marine environment.	• Potential slight shortterm impacts to the marine fauna, and localised temporary impacts to water quality and marine sediments.	• Compliance with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes (i.e. Marine Orders 95 and 94). • Compliance with Waste Management Plans for the storage, handling and transportation of wastes. • Attempted recovery of dropped waste objects where safe and practicable.
Physical Presence: Interactions with Marine Fauna	• Physical presence of vessels resulting in collision with marine fauna.	• Potential injury or death of marine fauna (single animal), including protected species.	• Comply with regulatory requirements for interactions (e.g., EPBC Regulations 2000 – Part 8 Division 8.1) with marine fauna to reduce the likelihood of a collision occurring.
Physical Presence: Introduction of Invasive Marine Species (IMS)	• Invasive species in vessel ballast tanks or on vessels/submersible equipment.	• Potential introduction of invasive marine species possibly resulting in an alteration of the localised environment.	• Ballast water and biofouling will be managed according to regulatory requirements, including the Australian Ballast Water Management Requirements, and the Australian Biofouling Management Requirements, as applicable. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment entering the PAA.
Unplanned Hydrocarbon Release: Loss of Well Containment	• Release of hydrocarbons resulting from loss of platform well containment. • Release of hydrocarbons resulting from loss of subsea well containment.	Potential significant impacts to the marine environment: • long-term impacts to sensitive nearshore areas of offshore islands and coastal shorelines. • disruption to marine fauna, including protected species. • potential short-term interference with or displacement of other sea users.	Preventing loss of well containment: • Well operated in compliance with the accepted safety case and well operation management plan (WOMP) including implementation of barriers to prevent a loss of well control. • Emergency response activities would be implemented in line with the OPEP.
Unplanned Hydrocarbon Release: Subsea Equipment Loss of Containment	• Release of hydrocarbons resulting from subsea equipment loss of containment within the NRC exclusion zone. • Release of hydrocarbons resulting from subsea equipment loss of containment outside the NRC exclusion zone.	Potential significant impacts to the marine environment: • long-term impacts to sensitive offshore and nearshore areas. • disruption to marine fauna, including protected species. • potential short-term interference with or displacement of other sea users.	Preventing subsea equipment loss of containment: • Subsea equipment operated in compliance with the accepted safety case. • Emergency response activities would be implemented in line with the OPEP.
Unplanned Hydrocarbon Release: Topsides Loss of Containment	• Hydrocarbon release from topside process equipment to the marine environment and atmosphere. • Hydrocarbon release from topsides non-process equipment to the marine environment.	Potential significant impacts to the marine environment: • medium-term impacts to sensitive offshore and nearshore areas. • disruption to marine fauna, including protected species. • potential short-term interference with or displacement of other sea users.	Preventing topsides loss of containment: • Activity is operated in compliance with the accepted safety case. • Emergency response activities would be implemented in line with the OPEP.

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Draft Mitigation and/or Management Measure
Unplanned Hydrocarbon Release: Loss of Structural Integrity	• Hydrocarbon release from platform well to the marine environment and atmosphere. • Hydrocarbon release from subsea equipment to the marine environment and atmosphere. • Hydrocarbon release from topsides equipment to the marine environment and atmosphere. • Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of NRC.	Potential significant impacts to the marine environment: • long-term impacts to sensitive offshore and nearshore areas. • disruption to marine fauna, including protected species. • potential short-term interference with or displacement of other sea users.	Preventing loss of structural integrity: • Activity is operated in compliance with the accepted safety case. • Emergency response activities would be implemented in line with the OPEP.
Unplanned Hydrocarbon Release: Loss of Marine Vessel Separation	• Hydrocarbon release from platform well to the marine environment and atmosphere. • Hydrocarbon release from subsea equipment to the marine environment and atmosphere. • Hydrocarbon release from topsides equipment to the marine environment and atmosphere. • Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of NRC.	Potential significant impacts to the marine environment: • long-term impacts to sensitive offshore and nearshore areas. • disruption to marine fauna, including protected species. • potential short-term interference with or displacement of other sea users.	Preventing loss of marine vessel separation: • Activity is operated in compliance with the accepted safety case. • Compliance with regulatory requirements for safe vessel operations (i.e. Marine Orders 21, 27 and 30). • Notify relevant stakeholders as required, prior to commencement and on completion of activities. • Emergency response activities would be implemented in line with the OPEP.
Unplanned Hydrocarbon Release: Loss of Control of Suspended Load from NRC Platform(s) Lifting Operations	• Hydrocarbon release from subsea equipment to the marine environment and atmosphere. • Hydrocarbon release from topsides equipment to the marine environment and atmosphere.	Potential significant impacts to the marine environment: • long-term impacts to sensitive offshore and nearshore areas. • disruption to marine fauna, including protected species. • potential short-term interference with or displacement of other sea users.	Preventing loss of control of suspended load: • Activity is operated in compliance with the accepted safety case. • Emergency response activities would be implemented in line with the OPEP.

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities.

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **19 July 2024** via:

E: Feedback@woodside.com

Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:

www.woodside.com/what-we-do/consultation-activities.

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as relevant and appropriate.

Your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to the NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)* and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA .

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit: www.woodside.com/what-we-do/consultation-activities

6.1.2 Summary Information Sheet

Woodside Energy

CONSULTATION

SUMMARY INFORMATION SHEET

June 2024

NORTH RANKIN COMPLEX OPERATIONS ENVIRONMENT PLAN

NORTH WEST SHELF, NORTH-WEST AUSTRALIA

In the course of preparing an Environment Plan (EP), Woodside Energy Ltd (Woodside) consults relevant persons to notify them and obtain their input. This assists Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. Woodside wants to give relevant persons whose functions, interests or activities may be affected by the proposed activity the opportunity to identify themselves and provide feedback on our proposed activity.

This summary information sheet provides a high-level overview of the North Rankin Complex Operations Environment Plan. Further details, including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures, are available within the North Rankin Operations Environment Plan Consultation Information Sheet (June 2024) which can be found at: www.woodside.com/what we do/consultation activities

Overview

Woodside is submitting a five-year revision of the EP for the North Rankin Complex (NRC) facility.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields.

The NRC facility is located in Commonwealth waters in 125 m water depth and associated subsea infrastructure in water depths ranging from -30 m to 125 m. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure. The gas and condensate are transported onshore for processing at the onshore Karratha Gas Plant via two 130 km trunklines.

A map showing the location of the activities is provided below.

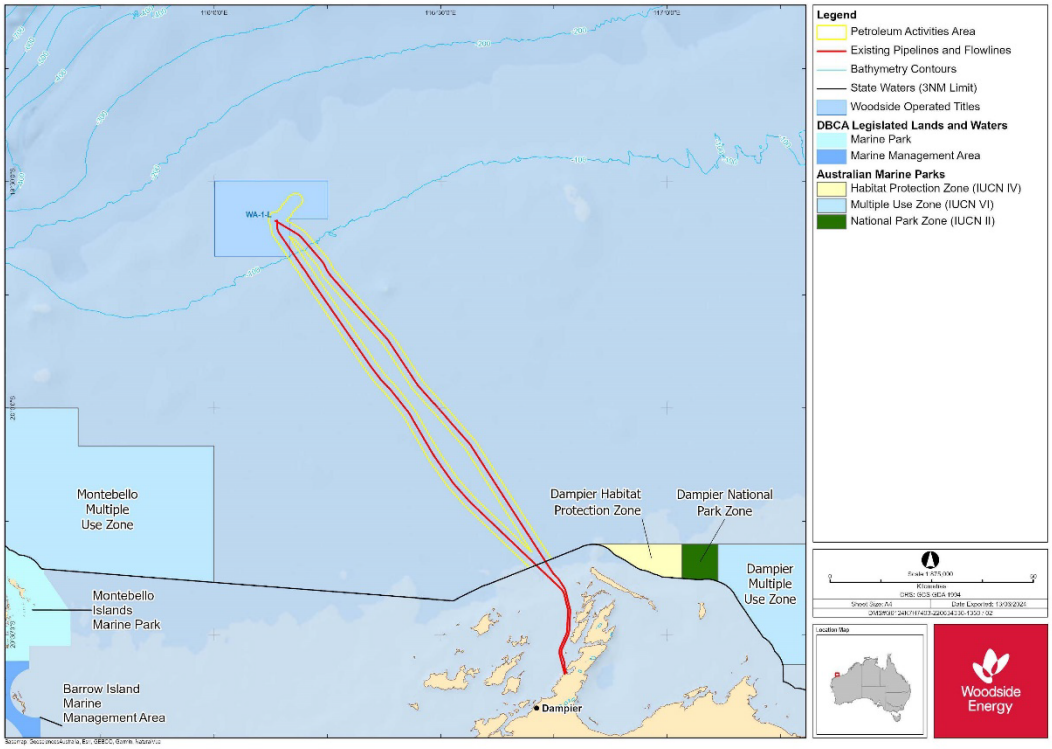


Figure 1: North Rankin Complex Operational Areas

Work method

Key features of the North Rankin Complex Operations include:

- Two fixed platforms: NRA and NRB. The platforms stand in water depth of approximately 125 m. The NRA platform includes process facilities, utilities, drilling equipment, temporary refuge, and a helideck. The NRB platform comprise of process facilities, accommodation and the Central Control Room. The NRB platform provides gas compression and condensate pumping for the well fluids produced from the NRA wells.
- Two export pipelines (trunklines) in water depth ranging between 30 m and 125 m, extending from the offshore platform to the onshore Karratha Gas plant.

Summary of key activities includes:

- Routine production
- Routine inspection, monitoring, maintenance, and repair (IMMR) of the platform and associated subsea infrastructure
- Well clean-up
- Platform well intervention, workovers and well control activities
- Non-routine and unplanned activities and incidents associated with the above.

During normal operations, vessels will typically be limited to support vessels and IMMR vessels. Vessels will operate 24 hours per day for the duration of activities. Platform support vessels will operate once weekly, the accommodation support vessel may be required for short periods, heavy lift vessels will be used for the removal of equipment, and helicopter support occurs approximately 14 trips fortnightly.

Production of gas and condensate began in 1984 and is expected to continue until at least 2036/37.

Figure 2: North Rankin Complex Facility

Environment That May Be Affected (EMBA)

The EMBA is the largest spatial extent where the North Rankin Complex Operations EP activities could potentially have an environmental consequence (Figure 3). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP, is determined by modelling the highly unlikely event of a hydrocarbon release. The modeling scenarios that inform the EMBA for this EP are well or subsea loss of containment.

The EMBA does not represent the extent of the predicted impact of the highly unlikely unplanned release of hydrocarbons. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on various factors including the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the whole EMBA will not be affected at one time. The specific and minimal part of the EMBA that is affected will be only known at the time of the release.

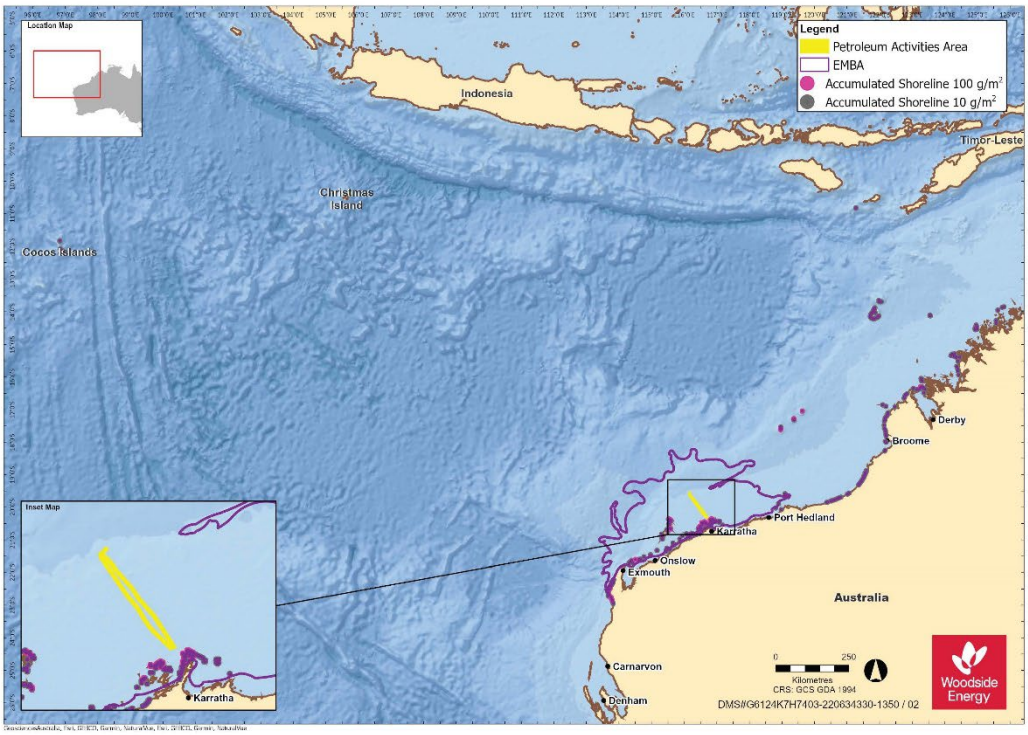


Figure 3: Environment that May Be Affected (EMBA) by the North Rankin Complex Operations Petroleum Activities Program

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities.

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **19 July 2024** via:

E: Feedback@woodside.com

Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:
www.woodside.com/what-we-do/consultation-activities

Please note that feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as required under legislation. Woodside will communicate material changes to the proposed activity to affected relevant persons as relevant and appropriate.

Your feedback and our response will be included in our Environment Plan for the proposed activities, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)* and may support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA .

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit:
www.woodside.com/what-we-do/consultation-activities

6.2 Initial Consultation

6.2.1 Email sent on 18 June 2024 to: Australian Border Force (ABF), Department of Foreign Affairs and Trade (DFAT) , Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Pilbara Ports Authority, Port of Cocos (Keeling) Island, Kimberley Ports Authority, Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel), Ningaloo Coast World Heritage Advisory Committee (NCWHAC) , Department of Biodiversity, Conservation and Attractions (DBCA), Department of Industry, Science and Resources (DISR), Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) , Western Gas, Exxon Mobil Australia Resources Company, Shell Australia, BP Developments Australia, Carnarvon Energy, PE Wheatstone, Kyushu Electric Wheatstone, Eni Australia, Finder Energy (Finder No 16), Jadestone, KUFPEC, Vermilion Oil & Gas, Santos NA Energy Holdings / Santos Ltd / Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG, Coastal Oil and Gas / Fox Resources, Bounty Oil and Gas, OMV Australia, KATO Energy / KATO Corowa / KATO NWS / KATO Amulet, INPEX Alpha, JX Nippon O&G Exploration (Australia), Beagle No. 1, Australian Energy Producers (AEP), Shire of Carnarvon, Town of Port Hedland, Shire of Wyndham-East Kimberley, Shire of Cocos (Keeling) Islands, Indian Ocean Territories Regional Development Organisation, Port Hedland Chamber of Commerce and Industry, Carnarvon Chamber of Commerce and Industry, East Kimberley Chamber of Commerce and Industry, Derby Chamber of Commerce and Industry, Broome Chamber of Commerce and Industry, Australian Conservation Foundation (ACF), Australian Marine Conservation Society (AMCS), Conservation Council of Western Australia (CCWA), Greenpeace Australia Pacific (GAP), 350 Australia (350A), Australasian Centre for Corporate Responsibility (ACCR), Doctors for the Environment Australia (DEA), Friends of Australian Rock Art. Inc (FARA), Market Forces, Environs Kimberley, Cape Conservation Group (CCG), Protect Ningaloo, Western Australia Marine Science Institution (WAMSI)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)

- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).

Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Platform support vessels, subsea support vessels, possible accommodation support vessels and others appropriate to nature of petroleum activities.

Feedback:
If you have feedback specific to the proposed activities, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.2 Email sent on 19 June 2024 to: Exmouth Community Liaison Group (CLG), Karratha Community Liaison Group (CLG), Onslow Chamber of Commerce and Industry, Shire of Derby/West Kimberley, Shire of Broome, Shire of Exmouth, City of Karratha

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:
- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)

- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).

Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Platform support vessels, subsea support vessels, possible accommodation support vessels and others appropriate to nature of petroleum activities.

Feedback:
If you have feedback specific to the proposed activities, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.3 Email sent on 18 June 2024 to: Department of Defence (DoD)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production

- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a defence area map in the areas surrounding the operational area.

Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is:

	• An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

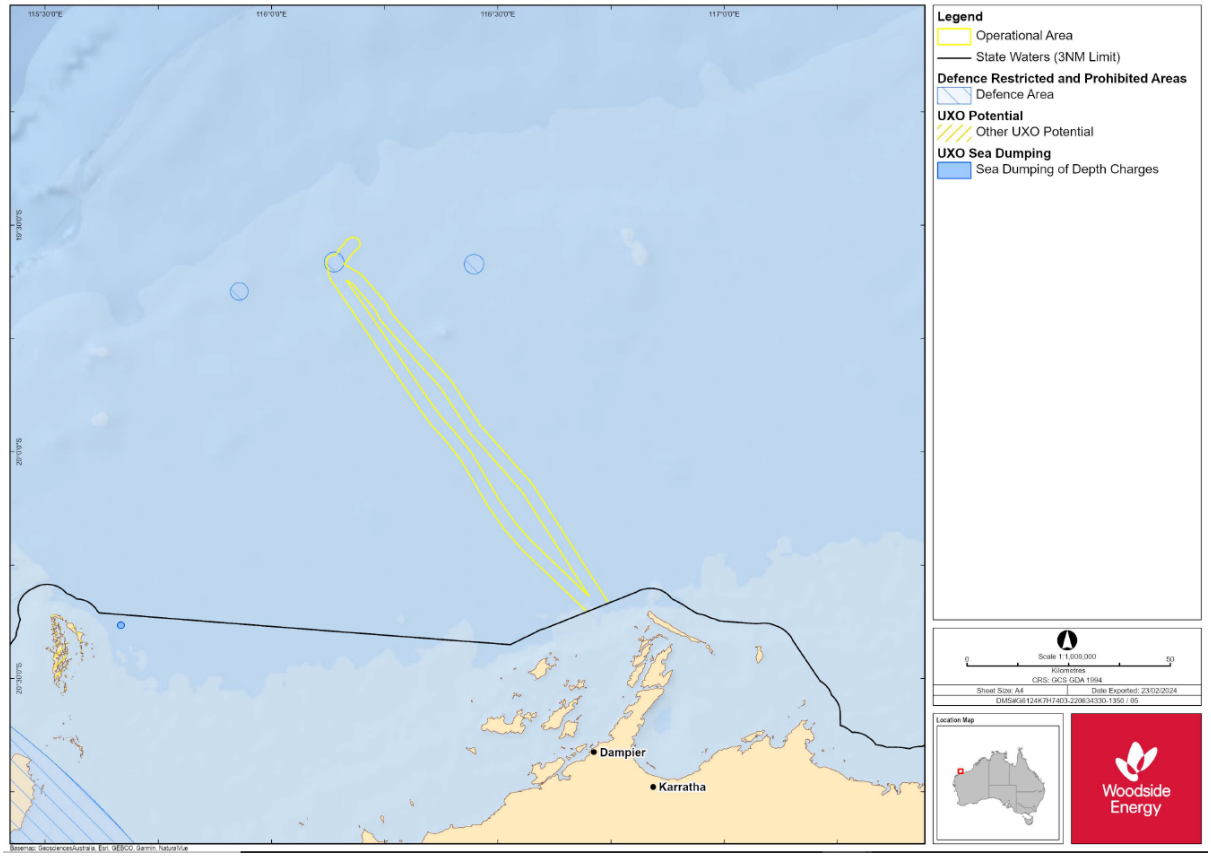
Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.3.1 Attachment: Defence zone map



6.2.4 Email sent on 18 June 2024 to: Telstra, Australian Communications and Media Authority (ACMA)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a map of the submarine communication cables in the vicinity of the operational area.

Activity: North Rankin Complex Facility Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).

Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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6.2.4.1 Email sent on 18 July 2024 to: Vocus

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.
Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.
Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.
The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up

- Non-routine and unplanned activities and incidents associated with the above.

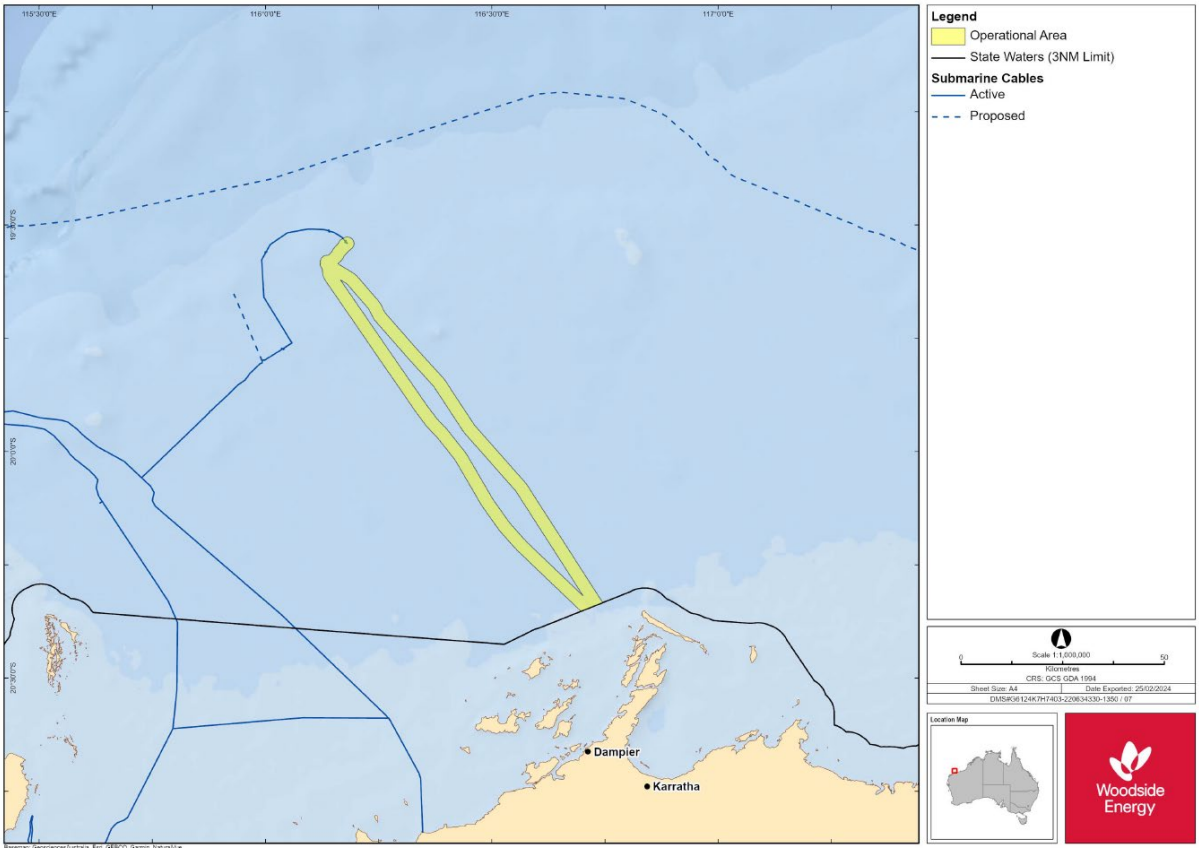
Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.
The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.
Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities. Please also find attached a map of the submarine communication cables in the vicinity of the operational area.
Activity: North Rankin Complex Facility Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters).

	• Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **16 August 2024.**
Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).
Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.
NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.
Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.4.2 Attachment: Submarine cables map



6.2.5 Email sent on 19 June 2024 to: Australian Hydrographic Office (AHO)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)

Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a vessel density map and a GIS Shape File.

Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters).

	• Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

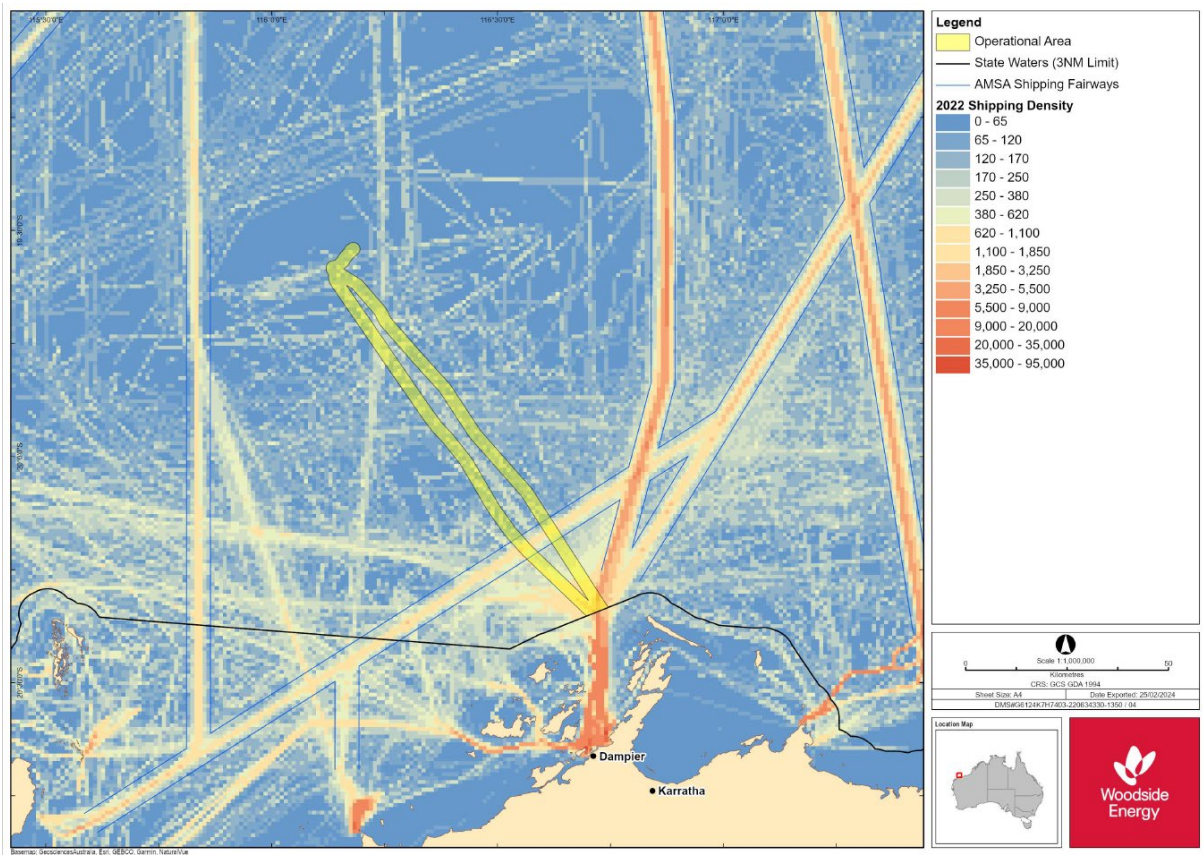
Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.5.1 Attachment: Shipping lanes



6.2.6 Email sent on 19 June 2024 to: Australian Maritime Safety Authority (AMSA) – Marine Safety

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview

The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)

Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a vessel density map and GIS shape files.

Please note that Woodside will:
- Notify the AHO no less than 4 weeks before operations commence,
- Notify AMSA's JRCC at least 24-48 hours before operations commence,
- Notify AMSA's JRCC when operations end,
- Provide updates to both the AHO and AMSA on any material changes to planned activities,
- Ensure vessels exhibit appropriate lights and shapes to reflect the nature of operations and the obligation to comply with the International Rules for Preventing Collisions at Sea,
- Evaluate and implement adequate anti-collision measures including but not limited to installation of Automatic Identification System (AIS) units, offshore guard vessel/s that can monitor traffic, and additional warnings and/or lights to attract attention.

Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing

Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

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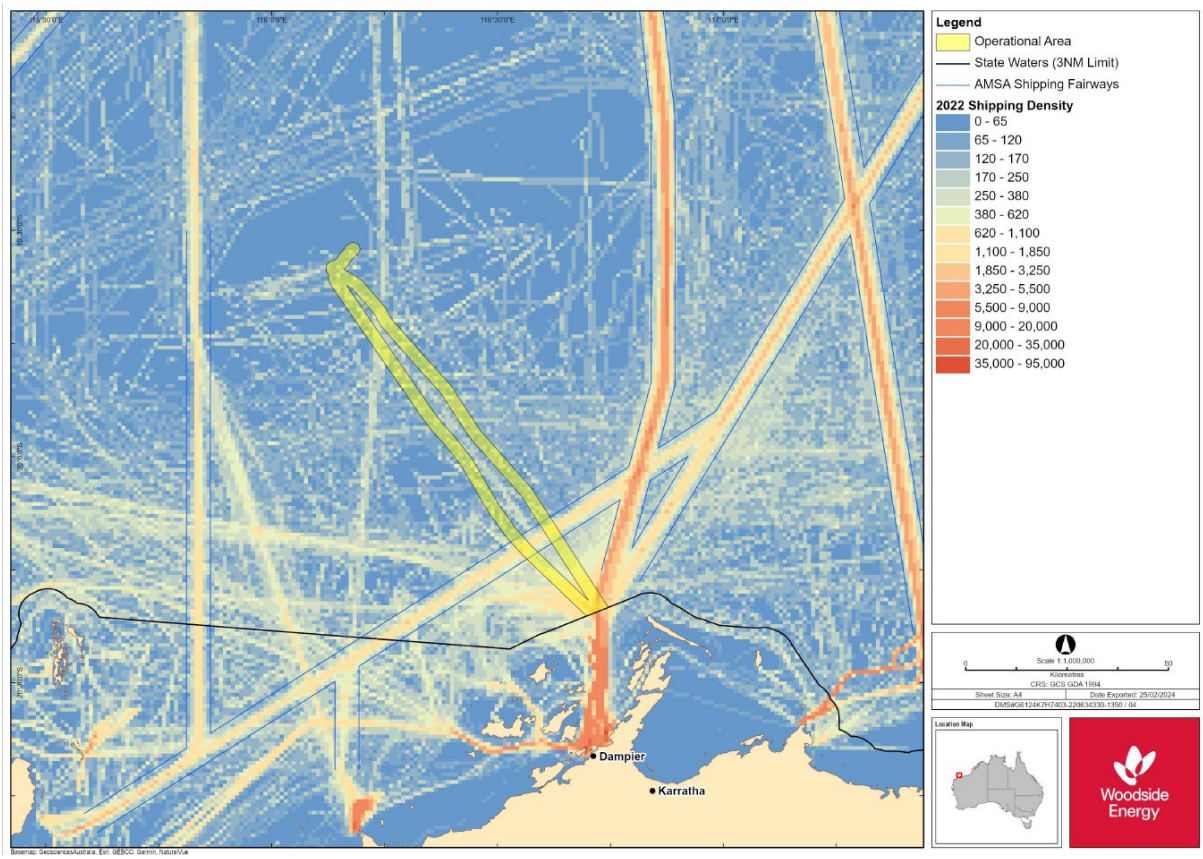
6.2.6.1 Attachment: Shipping lanes



6.2.7 Email sent on 18 June 2024 to: Australian Fisheries Management Authority (AFMA), North West Slope Trawl Fishery, Western Deepwater Trawl Fishery, Commonwealth Fisheries Association (CFA), Pearl Producers Association (PPA)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview

The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
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- Platform well intervention, workovers, and well control activities
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- Non-routine and unplanned activities and incidents associated with the above.

Operational Areas and Exclusion Zones
The Petroleum Activities Area (PAA), delineating the spatial extent of the Petroleum Activities Program, consists of two Operational Areas:

The Offshore Facility Operational Area includes:

- An area within a 500 m radius around the NRC facility.
- An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL).
- An area within 1500 m of Persephone (PSP) subsea infrastructure.

The Export Trunkline Operational Area is:

- An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please note that Woodside has provided consultation information directly to licence holders it has assessed as 'relevant persons' for this EP, as well as relevant fishery representative bodies.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m

Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.
Fisheries	**Commonwealth fisheries** Offshore Facility and Export Trunklines Operational Areas: No active fishery. EMBA: North West Slope Trawl Fishery and Western Deepwater Trawl.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

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6.2.8 Email sent on 18 June 2024 to: Department of Agriculture, Fisheries and Forestry (DAFF) - Fisheries

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

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Operational Areas and Exclusion Zones
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Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
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Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
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Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Fisheries	**Commonwealth fisheries** Offshore Facility and Export Trunklines Operational Areas: No active fishery. EMBA: North West Slope Trawl Fishery and Western Deepwater Trawl.

Biosecurity:
With respect to biosecurity matters, please note the following information below:

Environment description:

The operational areas for North Rankin Complex routine operations are located in water depths of approximately 30-162 m in the North West Shelf Province (NWS Province) within North-West Marine Region (NWMR). The NWS Province includes the continental shelf between the North West Cape and Cape Bougainville and characterised by sand and gravel to mud seabed habitats.

Potential IMS risk	***IMS risk mitigation management***
Accidental introduction and establishment of invasive marine species	All vessels will manage their ballast water in compliance with Australian Ballast Water Management Requirements under the *Biosecurity Act 2015*) to prevent the introduction of IMS. Internationally sourced project vessels will manage their biosecurity risk associated with biofouling in compliance with Australian Biofouling Management Requirements. Woodside's IMS risk assessment process will be applied to MODU, project vessels and relevant immersible equipment undertaking the Petroleum Activities Program. 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 NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

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6.2.9 Email sent on 18 June 2024 to: Director of National Parks (DNP)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
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Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.

Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
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Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Australian Marine Parks

We note Australian Government Guidance on consultation activities and confirm that:

- No AMP overlaps with the Operational Areas with the closest being Dampier AMP ~7 km from the Operational Areas
- We have assessed potential impacts to AMPs in the development of the revised EP and believe that impacts from planned activities are reduced to ALARP and Acceptable levels.
- Through review of new hydrocarbon spill modelling the following AMPs may be contacted in the event of a spill at either 50 ppb dissolved or 100 ppb entrained hydrocarbon thresholds:
    - Gascoyne
    - Dampier
    - Montebello
    - Ningaloo
    - Eighty Mile Beach

- Mermaid Reef
- Cocos (Keeling) Islands

A Commonwealth Government-approved oil spill response plan will be in place for the duration of the activities. This plan will include details on notification to relevant agencies and organisations as soon as practicable following an occurrence. The Director of National Parks will be advised if an environmental incident occurs that may impact the values of any Marine Park.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

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6.2.10 Email sent on 18 June 2024 to: Department of Transport (DoT)

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Overview

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If there is a risk of a spill impacting State waters, Woodside will further consult the Department of Transport as outlined in the Department of Transport Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).

Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
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Schedule	Production Commenced: 1984 Routine Operations: Ongoing
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Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

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6.2.11 Email sent on 18 June 2024 to: Department of Primary Industries and Regional Development (DPIRD)

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Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

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The Petroleum Activities Area (PAA), delineating the spatial extent of the Petroleum Activities Program, consists of two Operational Areas:

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The Export Trunkline Operational Area is:

- An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).

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Please note that Woodside has provided consultation information directly to licence holders it has assessed as 'relevant persons' for this EP, as well as relevant fishery representative bodies.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.

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Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.
Fisheries	**State fisheries** <u>Offshore Facility and Export Trunklines Operational Areas:</u> Mackerel Managed Fishery, Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery. <u>EMBA:</u> Exmouth Gulf Prawn Managed Fishery, Kimberley Crab Managed Fishery, Kimberley Gillnet and Barramundi Managed Fishery, Kimberley Prawn Managed Fishery, Mackerel Managed Fishery, Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Northern Demersal Scalefish Managed Fishery, Onslow Prawn Managed Fishery, Pearl Oyster Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Cocos (Keeling) Islands Marine Aquarium Fishery.

Feedback:

If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

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6.2.12 Email sent on 18 June 2024 to: Gascoyne Recreational Marine Users, Pilbara/Kimberley Recreational Marine Users, Recfishwest, Marine Tourism WA, WA Game Fishing Association

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Operational Areas and Exclusion Zones
The Petroleum Activities Area (PAA), delineating the spatial extent of the Petroleum Activities Program, consists of two Operational Areas:

The Offshore Facility Operational Area includes:

- An area within a 500 m radius around the NRC facility.

- An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL).
- An area within 1500 m of Persephone (PSP) subsea infrastructure.

The Export Trunkline Operational Area is:

- An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North Rankin Complex Operations

Environment Plan	**North Rankin Complex Operations Environment Plan**
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is:

	• An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

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6.2.13 Letter sent on 18 June 2024 to: Gascoyne Recreational Marine Users, Pilbara/Kimberley Recreational Marine Users

Please direct all responses/queries to:
Woodside Energy Feedback
T: 1800 442 977
E: feedback@woodside.com

18 June 2024

Woodside Energy (Australia) Pty Ltd
ACN 006 923 879
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
www.woodside.com

Dear Stakeholder

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview

The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Operational Areas and Exclusion Zones
The Petroleum Activities Area (PAA), delineating the spatial extent of the Petroleum Activities Program, consists of two Operational Areas:

The Offshore Facility Operational Area includes:

- An area within a 500 m radius around the NRC facility.
- An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL).
- An area within 1500 m of Persephone (PSP) subsea infrastructure.

The Export Trunkline Operational Area is:

- An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is enclosed, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please let us know if you require notification prior to and on completion of the proposed activities.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility (PSZ). • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

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NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation. You can access it online through the QR code below.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

Regards

Woodside Energy Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com
www.woodside.com

6.2.14 Email sent on 18 June 2024 to: University of Western Australia (UWA), Curtin University, Murdoch University, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australian Institute of Marine Science (AIMS)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

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- Routine production
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The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Woodside is seeking your advice regarding any research activities that your institution may be undertaking that may overlap with our proposed activities.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located

	in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

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6.2.15 Email sent on 18 June 2024 to: Department of Climate Change, Energy, the Environment and Water (DCCEEW)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

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Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached the details of Commonwealth shipwrecks that are relevant for this EP.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.

Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

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6.2.15.1 Attachment: Commonwealth shipwrecks

North Rankin Complex Operations Environment Plan – Commonwealth Shipwrecks

Vessel Name	Vessel Type	When Lost	Where Lost	Latitude	Longitude
Olive	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Parks Lugger	Sailing vessel		Hermite Island. Montebello Islands	-20.477082	115.528518
Pearl	Sailing vessel	1896	Exmouth Gulf, Meda Creek	-21.75	114.0833333
Vianen	Sailing vessel	1628	Barrow Island Area	-20	115.1666667
Wild Wave (China)	Sailing vessel	1873	Monte Bello Island	-20	115.1666667
Smuggler	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Jane Bay One Unidentified	Unknown		Jane Bay	-22.732317	113.73212
Mabel	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Marietta	Unknown	1905	Barrow Island	-20	115.1666667
Marutta	Unknown	1905		-20.72783333	115.4261667
Mary B	Unknown	1920		-20.01916667	118.81
Lady Ann	Sailing vessel	1982	24 miles north of NW Cape	-21.4	114.2
Lamareaux	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Leave	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Cassini Island Unidentified	Sailing vessel		Western side of Didji Point, Cassini Island	-13.953145	125.625359
Agnes	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Beatrice	Sailing vessel	1899	Off North-West Cape	-21.61666667	113.9833333
Bell	Sailing vessel	1893	Exmouth	-21.75	114.0833333
Elizabeth	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Florence	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Min Pin Liu No. 25 (Also Ming Pin Liu)	Unknown	1999	Cornelisse Shoal	-20.04138333	118.36805
Tanami	Sailing vessel		Trial Rocks	-20.28333	115.36666
Trial	Sailing vessel	1622	Trial Rocks	-20.28598333	115.3752333
Pearl	Sailing vessel	1920	Off North Turtle Island	-19.90026667	118.8796333
Perentie	Unknown	1976	Barrow Island	-20.72783333	115.4261667
Unidentified Lugger	Unknown	1893	Exmouth Gulf	-21.75	114.0833333
Veronica	Sailing vessel	1928	Sunday Island, Exmouth Gulf	-21.68333333	114.3833333
Lily Of The Lake	Sailing vessel	1875	Exmouth Gulf	-21.75	114.0833333
Rose	Sailing vessel	1908	Ashburton	-21.58333333	114.8333333
Ruby	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Sea Queen	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Wild Wave	Sailing vessel	1875	Exmouth Gulf	-21.75	114.0833333
Zelma	Unknown	1990	Dampier Archipelago	-20.37716667	116.8746667
Gem	Sailing vessel	1893	North West Cape	-21.61666667	113.9833333
Ellen	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Kapala	Unknown	1964	Exmouth Gulf	-21.75	114.0833333
Karrakatta	Twin screw steamer	1901	Swan Point, Broome side Swan Is 3/4 mile off shore	-16.35666667	123.035
Maratta	Unknown	1905		-20.72783333	115.4261167
Curlew	Sailing vessel	1911	At Onslow, Monte Bellos Group	-20	115.1666667
Dampier	Trawler		Enderby Island, Dampier Archipelago	-20.52333333	116.2366667
Nellie	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
McCormack		1989	N.E. tip of Eaglehawk Island West of Dampier,	-20.13666667	115.9533333
McDermott Derrick Barge No 20	Barge	1989	N.E. tip of Eaglehawk Island, Dampier Archipelago	-20.13666667	115.9533333
Plym HMS	Frigate	1952		-20.40346667	115.5658333
Tropic Queen		1975		-20.43333333	115.5008333

6.2.16 Email sent on 18 June 2024 to: Department of Planning, Lands and Heritage (DPLH)

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

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Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached the details of WA shipwrecks that are relevant for this EP.

Given the proximity of the proposed activities to Marine Parks, Woodside is consulting with the Department of Biodiversity, Conservation and Attractions (DBCA) for this EP. Woodside is also consulting with the Western Australian Museum and provided it with relevant shipwreck information for this EP.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.

Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
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6.2.16.1 Attachment: State shipwrecks

North Rankin Complex Operations Environment Plan – State Shipwrecks

Vessel Name	Vessel Type	When Lost	Where Lost	Latitude	Longitude
Cassini Island Unidentified		unknown	Western side of Didji Point, Cassini Island	13°57.1887	125°37.52154
Jane Bay One Unidentified		unknown	Jane Bay	22°43.93902	113°43.9272
Koombana	Steamship	3/20/1912	Between Port Hedland and Broome, near Bedout Island	19°24	118°54
Pearl	Lugger		Off North Turtle Island	19°54.016	118°52.778
Trial	Ship	1622/05/24	Trial Rocks	20°17.159	115°22.514
Marietta		2/8/1905	Barrow Island	20°00	115°10
Vianen	Ship	1628/01/25	Barrow Island Area	20°00	115°10
Wild Wave (China)	Brig	1873/08/30	Monte Bello Island	20°00	115°10
Karrakatta	Steamer screw	3/26/1901	Swan Point, Broome side Swan Is 3/4 mile off shore	16°21.4	123°02.1
Don Clarence	Schooner	5/26/1907	At Bedout Island	19°50	119°20
McCormack	Barge	1989/10/00	N.E. tip of Eaglehawk Island West of Dampier, Dampier Archipelago	20°08.200	115°57.200
Plym HMS	Warship	17808	Trimouille Island Island	20°24.208	115°33.950
Parks Lugger		unknown	Hermite Island. Montebello Islands	20°28.62492	115°31.71108
Dampier		unknown	Enderby Island, Dampier Archipelago	20°31.4	116°14.2
Maratta		1905		20°43.67	115°25.567
Marutta		1905		20°43.67	115°25.57
Mary B		1920		20°01.15	118°48.6
Min Pin Liu No. 25 (Also Ming Pin Liu)	Boat	3/10/1999	Cornelisse Shoal	20°02.483	118°22.083
Perentie		11/8/1976	Barrow Island	20°43.67	115°25.57
Samson II		8/17/1998		20°25.88	117°12.717
Tropic Queen		4/9/1975		20°26	115°30.05
Zelma		7/20/1990	Dampier Archipelago	20°22.63	116°52.48
Curlew	Lugger	2/7/1911	At Onslow, Monte Bellos Group	20°00	115°10
Veronica	Lugger	1928/07	Sunday Island, Exmouth Gulf	21°41	114°23
Lady Ann	Ship (non-sail)	9/18/1982	24 miles north of NW Cape	21°24	114°12
McDermott Derrick Barge No 20	Barge	10/20/1989	N.E. tip of Eaglehawk Island, Dampier Archipelago	20°08.200	115°57.200
Tantabiddi Lagoon Admiralty anchor			Tantabiddi Lagoon	21 54.843	113 57.779
Experimental shell pool	Other		North Delta Island, Monte Bello Islands	20°25.910546	115°32.605015

6.2.17 Email sent on 18 June 2024 to: Western Australian Museum

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview

The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached the details of WA shipwrecks that are relevant for this EP.

As per the *Underwater Cultural Heritage Act 2018 (Cwth),* Woodside will contact the Commonwealth regulator, the Department of Climate Change, Energy, the Environment and Water (DCCEEW), regarding this EP.

Woodside also refers to the Commonwealth Government's Underwater Cultural Heritage (UCH) Guidance document regarding assessments and the draft Guidelines for Working in Near and Offshore Environment to Protect Underwater Cultural Heritage.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.

Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.17.1 Attachment: State shipwrecks

North Rankin Complex Operations Environment Plan – State Shipwrecks

Vessel Name	Vessel Type	When Lost	Where Lost	Latitude	Longitude
Cassini Island Unidentified		unknown	Western side of Didji Point, Cassini Island	13°57.1887	125°37.52154
Jane Bay One Unidentified		unknown	Jane Bay	22°43.93902	113°43.9272
Koombana	Steamship	3/20/1912	Between Port Hedland and Broome, near Bedout Island	19°24	118°54
Pearl	Lugger		Off North Turtle Island	19°54.016	118°52.778
Trial	Ship	1622/05/24	Trial Rocks	20°17.159	115°22.514
Marietta		2/8/1905	Barrow Island	20°00	115°10
Vianen	Ship	1628/01/25	Barrow Island Area	20°00	115°10
Wild Wave (China)	Brig	1873/08/30	Monte Bello Island	20°00	115°10
Karrakatta	Steamer screw	3/26/1901	Swan Point, Broome side Swan Is 3/4 mile off shore	16°21.4	123°02.1
Don Clarence	Schooner	5/26/1907	At Bedout Island	19°50	119°20
McCormack	Barge	1989/10/00	N.E. tip of Eaglehawk Island West of Dampier, Dampier Archipelago	20°08.200	115°57.200
Plym HMS	Warship	17808	Trimouille Island Island	20°24.208	115°33.950
Parks Lugger		unknown	Hermite Island. Montebello Islands	20°28.62492	115°31.71108
Dampier		unknown	Enderby Island, Dampier Archipelago	20°31.4	116°14.2
Maratta		1905		20°43.67	115°25.567
Marutta		1905		20°43.67	115°25.57
Mary B		1920		20°01.15	118°48.6
Min Pin Liu No. 25 (Also Ming Pin Liu)	Boat	3/10/1999	Cornelisse Shoal	20°02.483	118°22.083
Perentie		11/8/1976	Barrow Island	20°43.67	115°25.57
Samson II		8/17/1998		20°25.88	117°12.717
Tropic Queen		4/9/1975		20°26	115°30.05
Zelma		7/20/1990	Dampier Archipelago	20°22.63	116°52.48
Curlew	Lugger	2/7/1911	At Onslow, Monte Bellos Group	20°00	115°10
Veronica	Lugger	1928/07	Sunday Island, Exmouth Gulf	21°41	114°23
Lady Ann	Ship (non-sail)	9/18/1982	24 miles north of NW Cape	21°24	114°12
McDermott Derrick Barge No 20	Barge	10/20/1989	N.E. tip of Eaglehawk Island, Dampier Archipelago	20°08.200	115°57.200
Tantabiddi Lagoon Admiralty anchor			Tantabiddi Lagoon	21 54.843	113 57.779
Experimental shell pool	Other		North Delta Island, Monte Bello Islands	20°25.910546	115°32.605015

6.2.18 Email sent on 19 June 2024 to: Shire of Ashburton

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview
The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities

- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Woodside is required to manage environmental impacts and risks to the EMBA by its proposed activities to As Low As Reasonably Practicable (ALARP) and to an acceptable level, as required by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulations), through the implementation of the EP. Woodside will submit the proposed EP to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Preparedness and Response
In the course of developing the EP, Woodside will develop the oil spill preparedness and response position tailored to this activity including the drafting of the Oil Pollution First Strike Plan which details the potential impacts, notifications and response mitigations that may be executed to manage an emergency event. Woodside consults with the relevant jurisdictional authorities and controlling agencies, including the Western Australian Department of Transport (DoT), the Australian Maritime Safety Agency (AMSA) and, in some circumstances, relevant port authorities, during the plan drafting process to inform mitigation management measures in place for the proposed activities. Woodside may also consult with other relevant external emergency management agencies, including LEMC, to ensure emergency management plans are aligned with effective outcomes.

In addition to the jurisdictional authorities and controlling agencies, the plan includes standard emergency notifications to agencies including NOPSEMA, the Department of Climate Change, Energy, the Environment and Water (DCCEEW), the Director of National Parks (DNP), and the WA Department of Biodiversity, Conservation and Attractions (DBCA). Where applicable, notification information for relevant Shires is also included in the Oil Pollution First Strike Plan.

Cultural heritage
Woodside routinely utilises the Department of Planning, Land and Heritage Aboriginal Cultural Heritage Inquiry System as part of the EP development process and includes the results of these inquiry system searches as an appendix to each EP.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).
Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment)*

Regulations 2023 (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

As per Woodside's ongoing consultation approach, feedback and comments received from relevant persons continue to be assessed and responded to, as required, throughout the life of an EP, including during its assessment and once accepted, in accordance with the intended outcome of consultation.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Please let us know if the Shire would like to receive start- and end-of-activity notifications.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.19 Email sent on 19 June 2024 to: Chevron

Woodside is planning to submit a five-year revision of the Operations Environment Plan (EP) for the North Rankin Complex (NRC) facility.

Overview

The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

The following proposed activities will continue at the facility:

- Routine production
- Routine inspection, monitoring, maintenance and repair (IMMR)
- Platform well intervention, workovers, and well control activities
- Well clean-up
- Non-routine and unplanned activities and incidents associated with the above.

Environment that May be Affected (EMBA)
Woodside consults persons or organisations located within the EMBA and whose functions, interests or activities may be affected by a proposed petroleum activity.

The EMBA is the largest spatial extent where activities could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this EP is determined by a highly unlikely release of hydrocarbons to the environment due to a well or subsea loss of containment.

Consultation information
A **Consultation Information Sheet** is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated

management measures. It is also available on our website. Here you can also subscribe to our newsletter *Let's Talk – Our Plans, Your Say* and to receive updates on our consultation activities.

Please also find attached a GIS Shape File.

We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, MidOcean Energy and JERA Gorgon for feedback.

Activity: North Rankin Complex Operations

Environment Plan	North Rankin Complex Operations Environment Plan
Summary of activities	Continued dry gas and condensate production at series of reservoirs.
Permit Area	Activities will occur within Production License WA-1-IL and WA-10-PL.
Location	The NRC facility is located ~135 km north west of Dampier, Western Australia in water depths of ~125 m. Subsea infrastructure is located in water depths from ~30-125 with two export trunklines extending 105 km to the State waters boundary.
Approx. Water Depth (m)	30-125 m
Schedule	Production Commenced: 1984 Routine Operations: Ongoing
Operational Areas and Exclusion Zones	The Petroleum Activity Area (PAA) consists of two Operational Areas: The Offshore Facility Operational Area includes: • An area within a 500 m radius around the NRC facility. • An area within 1500 m of NRC subsea infrastructure (excluding 1TL and 2TL). • An area within 1500 m of Persephone (PSP) subsea infrastructure. The Export Trunkline Operational Area is: • An area within 1500 m of 1TL and 2TL (between the NRC facility and the State waters boundary).
Infrastructure	Key infrastructure includes, but is not limited to: • Two interconnected platforms, NRA and NRB. • Export trunklines (1TL and 2TL) (Commonwealth waters). • Subsea infrastructure (Xmas-trees, manifolds, flowlines and umbilicals).

Vessels	Support vessels will be used for platform support, subsea support vessels to undertake IMMR activities, accommodation support.

Feedback:
If you have feedback specific to the proposed activities described under the NRC Operations EP, we welcome your feedback via email at Feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **19 July 2024.**

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.2.20 Email sent to Balanggarra Aboriginal Corporation – 18 June 2024

Dear [Individual 2]

Woodside Energy (Woodside) advises Balanggarra Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Balanggarra Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Balanggarra Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Balanggarra Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.21 Email sent to Bardi and Jawi Niimidiman Aboriginal Corporation – 19 June 2024

Hi [Individual 4]

Not sure if you have heard, but [Individual 5] has resigned, so I will be taking back the being the focal person with the Kimberley groups. I tried to call you earlier, however if your require more info than the previous email I sent, please reach out.

Woodside Energy (Woodside) advises Bardi Jawi Niimidiman Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Bardi Jawi Niimidiman Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Bardi Jawi Niimidiman Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

6. How could these activities impact your cultural values, interests, and activities?
1. Does protecting the environment do enough to protect your cultural values?
2. What are your concerns about the proposed activities and how can we resolve those issues?
3. What other elements should be considered in the Environmental Plan?
4. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Bardi Jawi Niimidiman Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on how and when we can engage.

Kind regards,

6.2.22 Email sent to Burrabalayji Thalanyji Aboriginal Corporation (BTAC) – 19 June 2024

Hi [Individual 6]

Woodside Energy (Woodside) advises Buurabalayji Thalanyji Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Buurabalayji Thalanyji Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Buurabalayji Thalanyji Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

5. How could these activities impact your cultural values, interests, and activities?
6. Does protecting the environment do enough to protect your cultural values?
1. What are your concerns about the proposed activities and how can we resolve those issues?
2. What other elements should be considered in the Environmental Plan?
3. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

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- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Buurabalayji Thalanyji Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.23 Email sent to Dambimangari Aboriginal Corporation – 18 June 2024

Dear [Individual 7]

I hope all is well.

Woodside Energy (Woodside) advises Dambimangari Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in **1984** and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Dambimangari Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Dambimangari Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Dambimangari Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on how you would like to engage.

Kind regards,

6.2.24 Email sent to Gogolanyngor Aboriginal Corporation – 16 June 2024

Hi [Individual 8]

Hope all is well mate. I will give you a call this week.

Woodside Energy (Woodside) advises Gogolanyngor Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations

Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan

EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Gogolanyngor Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Gogolanyngor Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

6. How could these activities impact your cultural values, interests, and activities?
1. Does protecting the environment do enough to protect your cultural values?
2. What are your concerns about the proposed activities and how can we resolve those issues?
3. What other elements should be considered in the Environmental Plan?
4. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Gogolanyngor Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.25 Email sent to Karajarri Traditional Lands Association (Aboriginal Corporation) – 19 June 2024

Dear Karajarri Lands Trust Association

Woodside Energy (Woodside) advises Karajarri Lands Trust Association of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Karajarri Lands Trust Association .

Consultation with Woodside

Woodside wishes to discuss the interests that Karajarri Lands Trust Association and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

5. How could these activities impact your cultural values, interests, and activities?
1. Does protecting the environment do enough to protect your cultural values?
2. What are your concerns about the proposed activities and how can we resolve those issues?
3. What other elements should be considered in the Environmental Plan?

4. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Karajarri Lands Trust Association, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.26 Email sent to Kariyarra Aboriginal Corporation – 17 June 2024

Dear [Individual 9],

My name is [Individual 10], and I am a First Nations Engagement Advisor at Woodside for the Pilbara Region. I am just returning from maternity leave and wanted to provide some information to the Kariyarra Community on an Environmental Plan that may be of relevance.

Woodside Energy (Woodside) advises **Kariyarra Aboriginal Corporation** of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with **Kariyarra Aboriginal Corporation.**

Consultation with Woodside

Woodside wishes to discuss the interests that **Kariyarra Aboriginal Corporation** and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **9th July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19th July 2024.**

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the **Kariyarra Aboriginal Corporation**, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

6.2.27 Email sent to Mayala Inninalang Aboriginal Corporation – 19 June 2024

Dear Mayala Aboriginal Corporation

Woodside Energy (Woodside) advises Mayala Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Mayala Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Mayala Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Mayala Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.28 Email sent to Murujuga Aboriginal Corporation – 18 June 2024

Hi [Individual 11]

I hope all is well.

The attached environment plan is a 5 year revision plan for an existing asset which commenced in 1984.

Woodside Energy (Woodside) advises Murujuga Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Murujuga Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Murujuga Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)

- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Murujuga Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.29 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) – 19 June 2024

Hi [Individual 12]

Woodside Energy (Woodside) advises Nganhurra Thanardi Garrbu Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:
- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;

- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Nganhurra Thanardi Garrbu Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Nganhurra Thanardi Garrbu Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Nganhurra Thanardi Garrbu Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.30 Email sent to Ngarluma Aboriginal Corporation – 19 June 2024

Dear [Individual 13]

Thank you for sending through the NAC protocols for communication. The document doesn't explicitly deal with Environment Plan-related discussions so for the avoidance of doubt I have cc'd in all parties referred to therein.

Woodside Energy (Woodside) advises Ngarluma Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan

EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Ngarluma Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Ngarluma Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA. We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by 19 July 2024 via:

- Email to Feedback@woodside.com
- Call 1800 442 977.

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Ngarluma Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

6.2.31 Email sent to Nyangumarta Karajarri Aboriginal Corporation – 19 June 2024

Dear Nyangumarta Karajarri Aboriginal Corporation

Woodside Energy (Woodside) advises Nyangumarta Karajarri Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Nyangumarta Karajarri Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Nyangumarta Karajarri Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

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- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Nyangumarta Karajarri Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.32 Email sent to Nyangumarta Warrarn Aboriginal Corporation – 19 June 2024

Hi [Individual 14], [Individual 15]

Woodside Energy (Woodside) advises Nyangumarta Warrarn Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan

EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Nyangumarta Warrarn Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Nyangumarta Warrarn Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Nyangumarta Warrarn Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.33 Email sent to Nyul Nyul PBC Aboriginal Corporation – 18 June 2024

Dear [Individual 16]

I believe in [Individual 17] absence, you are the contact for Nyul Nyul, however if you are not could you kindly point me to who I should be contacting.

Woodside Energy (Woodside) advises Nyul Nyul Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Nyul Nyul Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Nyul Nyul Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Nyul Nyul Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on how you would like us to engage with Nyul Nyul Aboriginal Corporation.

Kind regards,

6.2.34 Email sent to Robe River Kuruma Aboriginal Corporation – 17 June 2024

Hi [Individual 18] & [Individual 19],

I trust you are both well. I am returning from maternity leave and wanted to send through some information on an Environmental Plan that may be of relevance to the RRKAC Community. Please do not hesitate to reach out if you would like additional information or an opportunity to consult. I look forward to talking with you soon.

Woodside Energy (Woodside) advises **Robe River Kurama Aboriginal Corporation** of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with **Robe River Kurama Aboriginal Corporation.**

Consultation with Woodside

Woodside wishes to discuss the interests that **Robe River Kurama Aboriginal Corporation** and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **9th July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19th July 2024.**

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

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- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the **Robe River Kurama Aboriginal Corporation**, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

6.2.35 Email sent to Wanjina-Wanggurr (Native Title) Aboriginal Corporation – 18 June 2024

Dear [Individual 20]

Woodside Energy (Woodside) advises Wanjina Wunggurr Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations

Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Wanjina Wunggurr Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Wanjina Wunggurr Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Wanjina Wunggurr Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on how you would like us to engage.

Kind regards,

6.2.36 Email sent to Wanparta Aboriginal Corporation – 18 June 204

Dear [Individual 21]

I hope this email finds you well.

Woodside Energy (Woodside) advises Wanparta Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Wanparta Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Wanparta Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Wanparta Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on engagement.

Kind regards,

6.2.37 Email sent to Wilinggin Absorbingly Corporation – 19 June 2024

Dear Wilinggin Aboriginal Corporation

Woodside Energy (Woodside) advises Wilinggin Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations

Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan

EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Wilinggin Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Wilinggin Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Wilinggin Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.38 Email sent to Wirrawandi Aboriginal Corporation – 17 June 2024

Hi [Individual 22],

Woodside have an Environmental Plan that may be relevant to the Mardudhunera and Yaburara people so I wanted to send it through in case the group would like further information or an opportunity to consult. I have included all the relevant information but please do not hesitate to contact me if you would like to discuss this further.

Woodside Energy (Woodside) advises **Wirrawandi Aboriginal Corporation** of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with **Wirrawandi Aboriginal Corporation.**

Consultation with Woodside

Woodside wishes to discuss the interests that **Wirrawandi Aboriginal Corporation** and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?

5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **9th July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19th July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the **Wirrawandi Aboriginal Corporation**, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

6.2.39 Email sent to Wunambal Gaambera Aboriginal Corporation – 18 June 2024

Dear [Individual 23]

Woodside Energy (Woodside) advises Wunambal Gaambera Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Wunambal Gaambera Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Wunambal Gaambera Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?

4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Wunambal Gaambera Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps and how you would like us to engage.

Kind regards,

6.2.40 Email sent to Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang (MG Corp) – 18 June 2024

Hi [Individual 24]

I hope all is well with you.

Woodside Energy (Woodside) advises Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation (MG Corporation) of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:
- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with MG Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that MG Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the MG Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.41 Email sent to Yawuru Native Title Holders Aboriginal Corporation – 18 June 2024

Hi [Individual 25]

I hope all is well with you.

I believe you caught up with [Individual 26] recently. Unfortunately [Individual 26] has left due to [Individual 26] work load, hence I am now providing information to Nyamba Buru Yawuru.

Woodside Energy (Woodside) advises Nyamba Buru Yawuru of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Nyamba Buru Yawuru .

Consultation with Woodside

Woodside wishes to discuss the interests that Nyamba Buru Yawuru and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)

- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Nyamba Buru Yawuru, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.42 Email sent to Yindjibarndi Aboriginal Corporation – 17 June 2024

Dear [Individual 27],

As the delegated representative for **Yindjibarndi Aboriginal Corporation** please see included information relating to the ***North Rankin Complex Operation Environmental Plan***.

Woodside Energy (Woodside) advises **Yindjibarndi Aboriginal Corporation** of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:
- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or

- discuss further ways to consult and engage with **Yindjibarndi Aboriginal Corporation.**

Consultation with Woodside

Woodside wishes to discuss the interests that **Yindjibarndi Aboriginal Corporation** and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **9th July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19th July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the **Yindjibarndi Aboriginal Corporation**, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

6.2.43 Email sent to Yinggarda Aboriginal Corporation (YAC) – 18 June 2024

Dear [Individual 28], I hope all is travelling well.

Woodside Energy (Woodside) advises Yinggarda Aboriginal Corporation (YAC) of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures. The Consultation Information Sheet is attached and can be found here: nrc-facility-ep.pdf (woodside.com).

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;

- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with YAC.

Consultation with Woodside

Woodside wishes to discuss the interests that YAC and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA. We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Contacting me directly on the details below
- Email to Feedback@woodside.com
- Call 1800 442 977

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of YAC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

6.2.44 Email sent to Kimberley Land Council (KLC) – 19 June 2024

Hi [Individual 29]

I hope all is well.

Once again, I am sending Kimberley Land Council (KLC) a copy of the environment plan we have been providing to the EMBA relevant Kimberley PBC's.

Woodside Energy (Woodside) advises KLC of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity. The NRC environment plan is a five year revision on an asset near Dampier, WA which commenced in 1984.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;

- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with KLC.

Consultation with Woodside

Woodside wishes to discuss the interests that KLC and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
1. Does protecting the environment do enough to protect your cultural values?
2. What are your concerns about the proposed activities and how can we resolve those issues?
3. What other elements should be considered in the Environmental Plan?
4. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)

- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the KLC, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps if you would like to understand the environment plan further.

Kind regards,

6.2.45 Email sent to Yamatji Marlpa Aboriginal Corporation (YMAC) – 19 June 2024

Hi [Individual 12]

Woodside Energy (Woodside) advises Nganhurra Thanardi Garrbu Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:
- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;

- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Nganhurra Thanardi Garrbu Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Nganhurra Thanardi Garrbu Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

5. How could these activities impact your cultural values, interests, and activities?
1. Does protecting the environment do enough to protect your cultural values?
2. What are your concerns about the proposed activities and how can we resolve those issues?
3. What other elements should be considered in the Environmental Plan?
4. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback
It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)

- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Nganhurra Thanardi Garrbu Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards,

6.2.46 Email sent to Ngarluma Yindjibarndi Foundation Ltd (NYFL) – 17 June 2024

Hi [Individual 27],

I trust you are well. I am returning from maternity leave and wanted to send through some information on an Environmental Plan that may be of relevance to the NYFL Community. Please do not hesitate to reach out if you would like additional information or an opportunity to consult. I look forward to seeing you soon.

Woodside Energy (Woodside) advises **Ngarluma Yinjibarndi Foundation Limited (NYFL)** of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with **Ngarluma Yinjibarndi Foundation Limited (NYFL).**

Consultation with Woodside

Woodside wishes to discuss the interests that **Ngarluma Yinjibarndi Foundation Limited (NYFL)** and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

5. How could these activities impact your cultural values, interests, and activities?
6. Does protecting the environment do enough to protect your cultural values?
1. What are your concerns about the proposed activities and how can we resolve those issues?
2. What other elements should be considered in the Environmental Plan?
3. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **9th July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19th July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the

requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the **Ngarluma Yinjibarndi Foundation Limited (NYFL)**, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on next steps.

Kind regards

6.2.47 Email sent to Save our Songlines – 18 June 2024

Dear [Individual 1],

Woodside Energy (Woodside) advises you and Save our Songlines of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan

EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with yourself and Save our Songlines.

Consultation with Woodside

Woodside wishes to discuss the interests that you and Save our Songlines and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA. We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let us know by 19 July 2024 via:

- Email to Feedback@woodside.com
- Call 1800 442 977.

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)

- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of Save our Songlines, Traditional Owners and other people and organisations who may be interested.

We look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards,

6.2.48 Email sent to Lombadina Aboriginal Corporation – 18 June 2024

Hi [Individual 30]

I hope all is well.
The attached environment plan is a five year revision plan for the North Rankin Complex project which commenced operation in 1984 and is not a new project.

Woodside Energy (Woodside) advises Lombadina Aboriginal Corporation of its planned activities relating to the **North Rankin Complex Operations (NRC Operations) Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Lombadina Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Lombadina Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Lombadina Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on how Lombadina would like us to engage.

Kind regards,

6.2.49 Email sent to Walalakoo Aboriginal Corporation – 18 June 2024

Dear [Individual 31], [Individual 32]

Woodside Energy (Woodside) advises Walalakoo Aboriginal Corporation RNTBC of its planned activities relating to the **North Rankin Complex Operations Environment Plan**. This includes engaging and consulting with relevant stakeholders that may be affected by the activity.

To comply with legislative and regulatory requirements, Woodside must submit Environment Plans (EP) that relate to activities within Australia's Commonwealth Waters to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Overview of NRC Operations
Woodside is submitting a five-year revision of the EP for the NRC Operations facility. The NRC facility began operation in 1984 and is expected to continue until at least 2036/37. The facility operates 24 hours a day, 365 days a year.

The EP covers the facility located 135 km north-west of Dampier, Western Australia. It is comprised of two fixed platforms, the North Rankin A (NRA) platform and the North Rankin B (NRB) platform, and subsea infrastructure connected to the North Rankin, Persephone and Perseus fields. The NRC facility produces dry gas and condensate from a series of reservoirs and associated subsea infrastructure.

The attached Summary Information Sheet provides a high-level overview of the NRC Operations Environment Plan, including the Environment that May Be Affected (EMBA) map. The Consultation Information Sheet provides further details about the activity including an assessment of the potential impacts and risks to the environment, as well as mitigation and management measures.

Environment Plan
EPs include evidence of comprehensive and rigorous consultation with relevant agencies, corporations, communities and individuals. This includes Traditional Owners, Aboriginal corporations, and First Nations peoples and communities.

The purpose of this email is to:

- inform you about Woodside's plans for the North Rankin Complex (NRC) Operations;
- invite you to submit feedback about the activity;
- provide an opportunity to discuss this activity with you and your members; and/or
- discuss further ways to consult and engage with Walalakoo Aboriginal Corporation.

Consultation with Woodside

Woodside wishes to discuss the interests that Walalakoo Aboriginal Corporation and its members may have regarding NRC Operations.

We are keen to know, understand and gather your feedback about the following:

1. How could these activities impact your cultural values, interests, and activities?
2. Does protecting the environment do enough to protect your cultural values?
3. What are your concerns about the proposed activities and how can we resolve those issues?
4. What other elements should be considered in the Environmental Plan?
5. Are there any other individuals, groups, or organisations you think we should talk to?

Your feedback, opinions and comments will be reflected in the EP and considered by NOPSEMA.

We are also open to speaking with Elders, office holders and other interested parties as requested about this specific Woodside activity, as well as discussing how you would like to build a relationship with Woodside for future contribution to other EPs.

Please advise of us of your preferred method of consultation and if there is any support or specific information that you require as part of our engagement. This includes the opportunity to meet with you face to face.

Ongoing Feedback

It is important to know that we will continue to accept feedback from you for the life of the EP.

If you would like to provide feedback and/or speak with us, please let me know by **19 July 2024** via:

- Email to Feedback@woodside.com
- Call 1800 442 977.
- Email to [Individual 3]

Please inform us if specific information that you provide in the consultation is not to be published. If so, we will make your request known to NOPSEMA.

Further information about NOPSEMA

Feedback can also be submitted directly to NOPSEMA via email communications@nopsema.gov.au or telephone (08) 6188 8700. If providing feedback directly to NOPSEMA, the final submission date is **19 July 2024**.

NOPSEMA has published a brochure titled *Consultation on offshore petroleum environment plans – Information for the community* to help peak bodies, communities and the public understand the

requirements and participate in the consultation for Commonwealth EPs. Additional sources of information are located on NOPSEMA's website (Document Hub | NOPSEMA) and listed below:

- **Brochure:** Consultation on offshore petroleum environment plans brochure.pdf (nopsema.gov.au)
- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- **Policy:** Draft policy for managing gender-restricted information PL2098.pdf (nopsema.gov.au).

Please feel free to forward this email and the attached document to members of the Walalakoo Aboriginal Corporation, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call and send through guidance on how you would like us to engage.

Kind regards,

6.2.50 Follow up email sent to Department of Defence, Vocus, Telstra, AFMA, CFA, PPA, North West Slope Trawl Fishery, Western Deepwater Trawl Fishery, DAFF, DPIRD, DoT, DPLH, WA Museum, CSIRO, UWA, Murdoch University, Curtin University, CSIRO, Gascoyne Recreational Marine Users, Pilbara/Kimberley Recreational Marine Users, Recfishwest, Marine Tourism WA, WA Game Fishing Association, DNP, DCCEEW, AHO, Chevron, AMSA, Shire of Ashburton, Shire of Exmouth, City of Karratha, Onslow CCI, Karratha CLG, Exmouth CLG, Australian Border Force (ABF), Department of Foreign Affairs and Trade (DFAT) , Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Pilbara Ports Authority, Port of Cocos (Keeling) Island, Kimberley Ports Authority, Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel), Ningaloo Coast World Heritage Advisory Committee (NCWHAC) , Department of Biodiversity, Conservation and Attractions (DBCA), Department of Industry, Science and Resources (DISR), Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) , Western Gas, Exxon Mobil Australia Resources Company, Shell Australia, BP Developments Australia, Carnarvon Energy, PE Wheatstone, Kyushu Electric Wheatstone, Jadestone, KUFPEC, Vermilion Oil & Gas, Santos NA Energy Holdings / Santos Ltd / Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG, Coastal Oil and Gas / Fox Resources, Bounty Oil and Gas, OMV Australia, KATO Energy / KATO Corowa / KATO NWS / KATO Amulet, INPEX Alpha, JX Nippon O&G Exploration (Australia), Beagle No. 1, Australian Energy Producers (AEP), Shire of Exmouth, City of Karratha, Shire of Carnarvon, Town of Port Hedland, Shire of Wyndham-East Kimberley, Shire of Derby/West Kimberley, Shire of Broome, Shire of Cocos (Keeling) Islands, Indian Ocean Territories Regional

Development Organisation, Exmouth Community Liaison Group (CLG), Karratha Community Liaison Group (CLG), Onslow Chamber of Commerce and Industry, Port Hedland Chamber of Commerce and Industry, Carnarvon Chamber of Commerce and Industry, East Kimberley Chamber of Commerce and Industry, Derby Chamber of Commerce and Industry, Broome Chamber of Commerce and Industry, Australian Conservation Foundation (ACF), Australian Marine Conservation Society (AMCS), Conservation Council of Western Australia (CCWA), Greenpeace Australia Pacific (GAP), 350 Australia (350A), Australasian Centre for Corporate Responsibility (ACCR), Doctors for the Environment Australia (DEA), Friends of Australian Rock Art. Inc (FARA), Market Forces, Environs Kimberley, Cape Conservation Group (CCG), Protect Ningaloo, Western Australia Marine Science Institution (WAMSI) on 11 July 2024

Woodside previously consulted you on its plans to submit the North Rankin Complex (NRC) Environment Plan (EP).

The NRC facility is in Production Licence WA-1-IL, located in Commonwealth waters approximately 135 km north west of Dampier, Western Australia.

Woodside plans to continue producing dry gas and condensate from a series of reservoirs. The gas and condensate are transported onshore via two 130 km long export trunklines. Operations began in 1984 and are expected to continue until at least 2036/37.

Information on the EP is provided in the email below and in the Consultation Information Sheet, which is available on Woodside's website.

If you have feedback specific to the activities and the proposed EP, Woodside welcomes it at Feedback@woodside.com or 1800 442 977 by **19 July 2024**.

Your feedback and our response will be included in our EP which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)*. Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

6.3 Advertisements and Social Media

6.3.1 Newspapers

Newspaper	Coverage	Publication dates
The Australian	National	17 June 2024
The West Australian	Regional (WA)	17 June 2024
Pilbara News	Local (WA)	19 June 2024
Broome Advertiser	Local (WA)	20 June 2024
Kimberley Echo	Local (WA)	20 June 2024
North West Telegraph	Local (WA)	19 June 2024
Koori Mail	Indigenous	19 June 2024
National Indigenous Times	Indigenous	28 June 2024

6.3.1.1 The Australian – 17 June 2024

10 THE AUSTRALIAN, MONDAY, JUNE 17, 2024 theaustralian.com.au

WORLD

Israel pauses fighting to allow in aid

GAZA STRIP: Israel's military said on Sunday it would "pause" fighting around a south Gaza route daily to facilitate aid deliveries, following months of warnings of famine in the besieged Palestinian territory.

The announcement of a "local, tactical pause of military activity" during daylight hours in an area of Rafah came a day after eight Israeli soldiers were killed in a blast near the far southern city and three more troops died elsewhere, in one of the heaviest losses for the army in its war against Hamas militants.

UN agencies and aid groups have repeatedly sounded the alarm of dire shortages of food and other essentials in the Gaza Strip, exacerbated by overland access restrictions and the closure of the key Rafah crossing with Egypt since Israeli forces seized it in early May. Israel has long defended its efforts to let aid into Gaza including via its Kerem Shalom border near Rafah, blaming militants for looting supplies and humanitarian workers for failing to distribute them to civilians.

"A local, tactical pause of military activity for humanitarian purposes will take place from 8am until 7pm every day until further notice along the road that leads from the Kerem Shalom crossing to the Salah al-Din road and then northwards," the military said.

A map released by the army showed the declared humanitarian route extending until Rafah's European Hospital, about 10km from Kerem Shalom.

The military said the soldiers killed on Saturday were in a Namer armoured vehicle that exploded near Rafah, where troops are engaged in fierce street battles.

Military spokesman Daniel Hagari told a televised briefing that the blast was "apparently from an explosive device planted in the area or from the firing of an anti-tank missile".

Saturday's losses were among the heaviest for the military since it began its ground offensive in Gaza on October 27 and took its overall toll since then to 306 deaths.

In the single largest loss of life for the army, 21 soldiers were killed on January 22 when rocket-propelled grenade fire hit a tank near two buildings they were preparing to blow up.

Israeli Prime Minister Benjamin Netanyahu paid tribute to the soldiers who had lost their lives. "Our hearts are shattered before this terrible loss," he said. "Despite the heavy and unsettling price, we must cling to the goals of the war."

At the weekly protest in Tel Aviv against his government's handling of the war, protester Graciela Bartshire, 68, said she felt "a lot of anger and disappointment". "I believe this government is not working and we have to go to elections now," she said.

In Rafah, witnesses reported clashes between militants and Israeli troops in the city's west, and artillery fire towards a refugee camp in the city centre.

The UN says about one million people have fled Rafah since early May, when Israel began ground operations in the city in pursuit of Hamas militants.

In Gaza City, in the north of the territory, the civil defence agency reported recovering 10 bodies from three separate homes hit by Israeli strikes.

The Gaza war began after Hamas's October 7 attack on southern Israel, which resulted in the deaths of 1134 people, mostly civilians. The militants also seized 251 hostages. Of these, 116 remain in Gaza, although the army says 41 are dead. Israel's retaliatory offensive has killed at least 37,296 people in Gaza, also mostly civilians, according to the health ministry in the Hamas-ruled territory.

Fears of the war spilling over into a broader Middle East conflict have been rekindled in recent days by an escalation of tit-for-tat violence between Israel and Lebanese militant group Hezbollah, a Hamas ally. Hezbollah said its strikes since Wednesday were retaliation for Israel's killing of one of its commanders.

Israeli forces responded with shelling, the military said, also announcing airstrikes on Hezbollah infrastructure across the border.

The two top UN officials in Lebanon called on all sides to cease fire. "The danger of miscalculation leading to a sudden and wider conflict is very real," they said in a joint statement.

During a Middle East trip this week to push a Gaza truce plan, US Secretary of State Antony Blinken said "the best way" to help resolve the Hezbollah-Israel violence was "a resolution of the conflict in Gaza and getting a ceasefire".

That has not happened.

Hamas has insisted on the complete withdrawal of Israeli forces from Gaza and a permanent ceasefire – demands Israel has repeatedly rejected. Mr Blinken has said Israel backs the latest plan, but Mr Netanyahu, whose far-right coalition partners are strongly opposed to a ceasefire, has not publicly endorsed it.

The US military said a pier it built to help bring aid into Gaza would be temporarily moved to an Israeli port to protect it from expected high seas. The platform had been reattached to Gaza's shore only a week before, after storm damage.

AFP

'Our hearts are shattered before this terrible loss. Despite the heavy and unsettling price, we must cling to the goals of the war'

BENJAMIN NETANYAHU ISRAELI PRIME MINISTER

A protester is detained in Tel Aviv at the weekend during a rally to call for a hostage deal with Hamas AFP

Cargo ship hit by Houthi rebels abandoned: US

WASHINGTON: The crew of a bulk cargo carrier that was damaged in a missile attack by Yemen's Houthi rebels in the Gulf of Aden has abandoned the ship, the US military said overnight Saturday.

The Houthis have been targeting ships in the Red Sea and Gulf of Aden since November 2023 in attacks they say are in solidarity with Palestinians during the Israel-Hamas war in the Gaza Strip.

Those attacks surged last week.

The crew of the MV Verbena – a Palauan-flagged, Ukrainian-owned, Polish-operated ship – is said to be safe because it could not control fires started by the attack with two cruise missiles from the Iran-backed rebels on Thursday, US Central Command said.

Another cargo ship rescued the crew, CENTCOM said on X.

"The Iranian Brigade IRGN Jamaran was eight nautical miles from M/V Verbena and did not respond to the distress call," CENTCOM said. The missile attack severely injured a sailor, who was evacuated by US forces.

Another cargo ship, the M/V Tutor, was abandoned after it was struck by a sea drone off the rebel-held city of Hodeida on Wednesday, causing serious flooding, said the UK Maritime Trade Operations, which is run by the British navy. The vessel is adrift in the Red Sea.

Referring to the Verbena and the Tutor on Saturday, a Houthi spokesman said the "operations are dedicated ... to our brothers fighting in Gaza". The group also renewed its "warning to all companies about the consequences of dealing with Israel".

The Houthis seized Yemen's capital Sanaa in 2014, prompting a Saudi-led military intervention in support of the government the next year. Yemen's war has left hundreds of thousands of people dead, through fighting, disease or lack of food, with most of the population dependent on aid.

AFP

Swedes freed in Iranian exchange

HENRIT HALCOM LAURENCE NORMAN

Iran on Saturday released two Swedish citizens, including an EU official, in exchange for an Iranian convicted in Stockholm of committing war crimes for his role in the 1988 mass executions in the Islamic Republic.

The move comes during a transition in Iran, with presidential elections due this month, after the death of president Ebrahim Raisi in a May helicopter crash. Iran has released several European prisoners in recent months, somewhat cooling tensions with the EU over Iran's military support for Russia and its nuclear program advances.

Iran has consistently used hostage diplomacy since its 1979 Islamic Revolution in negotiations with the West.

In a deal between Sweden and Iran mediated by Oman, Tehran freed Swedish diplomat Johan Floderus, who was working for the EU's foreign service still and had previously served as a senior official in the EU's executive arm.

Iran also released Iran-Swedish national Saeed Azizi, who had recently been jailed for five years by a Tehran court on charges of "assembly and collusion against national security".

"Delighted at the news our Swedish colleague, Johan Floderus, and his compatriot Saeed Azizi have been released from unjustified Iranian custody," said European Commission president Ursula von der Leyen. While EU officials had repeatedly pressed Iranian authorities to release the Swedish citizens, Sweden largely handled the case.

In exchange for its citizens, Sweden released Hamid Nouri, who had been arrested in Sweden in 2019 and convicted for his role in the 1988 executions of political prisoners. Nouri was an aide to a deputy prosecutor who ordered some of the killings.

Iran called his captivity "illegal and illegitimate". A spokesman for the Mujahedin-e Khalq, an anti-regime group whose members were killed in large numbers in the 1988 executions, called Nouri's release "shameful and unjustifiable", and said it would encourage "blackmail".

On Thursday, Iran also freed a French national who had been imprisoned in Tehran since September 2022 on allegations he had joined the widespread protests that erupted that month across Iran. The family of Frenchman Louis Arnaud has always said he was a tourist travelling through Iran as part of a global tour.

Iran didn't give a reason for releasing Arnaud, but the previous day French police raided the offices of Mujahedin-e Khalq in a Paris suburb, part of tighter oversight from French authorities. Iran has long protected the presence in European countries of the MEK. It welcomed this week's French raid.

Tehran is also lobbying the French government to release one of its nationals, a former state television journalist detained in France for what Iran says was posting anti-Israeli propaganda. France's Interior Ministry hasn't commented on the arrest and couldn't immediately be reached on Saturday.

Iran has used past prisoner exchanges to free its citizens or – as may God give victory to the Muslims," one pilgrim shouted on Mount Arafat on Saturday.

In a message to hajj pilgrims on Saturday, Iranian supreme leader Ayatollah Ali Khamenei said "the ironclad resistance of Palestine and the patient, oppressed people of Gaza ... must be fully supported in every way".

AFP

Iran also used past prisoner exchanges to free its citizens or sometimes to resolve money or sanctions relief in return. Iran held up to 30 EU citizens last year, EU officials said, but several have since been released.

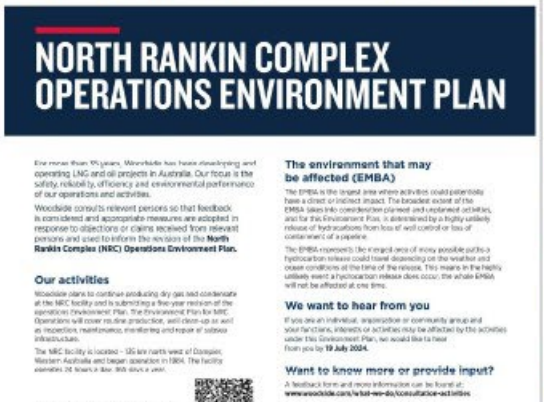
Last year, Belgium freed an Iranian diplomat convicted of a Paris bomb plot in exchange for a Belgian aid worker detained in Tehran. How ever, Iran still holds several Westerners, including two French trade unionists accused of links with Iranian teachers campaigning for better pay.

Floderus was detained in 2022, weeks before a Swedish court sentenced Nouri to life in prison. Last week's prisoner release came at a volatile time in Iran following Israel's attack on Iran's consulate in Syria's capital Damascus on April 1, which killed seven Iranian officers, including two generals.

Tehran is also facing growing Western pressure over advances in its nuclear program and its support for regional proxies across the Middle East in the war in Gaza and Israel.

Last September, Iran released four Americans from prison as part of a prisoner swap, which also saw Washington agree to unfreeze billions of dollars of Iranian oil revenues trapped overseas under US sanctions.

THE WALL STREET JOURNAL



Hajj pilgrims 'stone the devil' as Muslims mark Eid al-Adha

SHAAR AL ATTAR MINA

Pilgrims perform the last major ritual of the hajj, the "stoning of the devil", in western Saudi Arabia on Sunday, as Muslims the world over celebrate the Eid al-Adha holiday.

Beginning at dawn, the 1.8 million Muslims undertaking the pilgrimage this year will throw seven times at each of three encircle walls symbolising the devil in the Mina valley, located outside Mecca, the holiest city in Islam.

The ritual commemorates Abraham's stoning of the devil at the three spots where it is said Satan tried to dissuade him from obeying God's order to sacrifice his son.

The stoning ritual has been witness to multiple stampedes over the years, most recently in 2015 when up to 2300 worshippers were killed in the worst hajj disaster. The site has been revamped since then to streamline the movement of the large crowds.

On Saturday night, pilgrims collected stones and slept under the stars in the plain of Muzdalifah, located halfway between Mina and Arafat, where they had spent the day praying outside in heat that reached 46C. "It was very, very hot," said Ruby Dainoo, a 60-year-old Gambian living in the US. "Alhamdulilah (thank God), I put a lot of water on my head and it was OK."

Worshippers have tried to take the gruelling conditions in stride, seeing what for many is a once-in-a-lifetime chance to pray at Islam's holiest shrines.

A Muslim pilgrim prays at dawn on Mount Arafat AFP

"I am so happy that I can't describe my feelings," said Amal Mahrouz, a 55-year-old woman from Egypt. "This place shows us that we are all equal, that there are no differences between Muslims around the world."

One of the five pillars of Islam, the hajj must be performed at least once by all Muslims with the means.

This year's figure of 1.8 million pilgrims is similar to last year's, and Saudi authorities said on Saturday that 1.6 million of them came from abroad.

The stoning ritual coincides with the feast of the sacrifice, or Eid al-Adha, which honours Abraham's willingness to sacrifice his son before God offered a sheep instead. Worshippers typically slaughter a sheep and offer part of the meat to the needy.

This year's hajj and Eid al-Adha holiday have been clouded by the war between Israel and Hamas in the Gaza Strip.

"We are very sad for the Palestinians, and we have prayed a lot for them," said Intisar, a 25-year-old Syrian living in Saudi Arabia, who declined to give her surname.

King Salman invited 2000 Palestinians to the hajj at his own expense, half of whom are family members of victims in Gaza who have sought refuge elsewhere.

Saudi authorities have warned that no political slogans would be tolerated during the pilgrimage.

That has not stopped many worshippers from voicing solidarity with Palestinians. "I pray for our brothers in Palestine, in Gaza ... may God give victory to the

New Caledonia airport to reopen

NOUMEA: New Caledonia's main international airport will reopen from Monday after being shut last month during a spate of deadly protests, the high commission in the French Pacific territory said, adding a curfew would also be reduced.

The commission said on Sunday it had "decided to reopen the airport during the day" and to "push back to 8pm (from 6pm) the start of the curfew as of Monday".

The measures had been introduced after violence broke out on May 13 over a voting reform that would have allowed long-term residents to participate in local elections. The archipelago's Indigenous Kanaks feared the move would dilute their vote, pulling hopes for strong independence out of reach. Barricades, skirmishes with the police and looting left nine dead and hundreds injured, and inflicted hundreds of millions of dollars in damage.

The full resumption of flights at Tontouta airport was made possible by the reopening of an expressway linking it to the capital Nouméa that had been blockaded by demonstrators.

Previously the airport was only handling a small number of flights with special exemptions.

Meanwhile, the curfew, which runs until 6am, was reduced "in light of the improvement in the situation and in order to facilitate the gradual return to normal life", the commission said.

French President Emmanuel Macron had announced on Wednesday that the voting reform that touched off the unrest would be "suspended" in light of snap parliamentary polls. Although approved by both France's National Assembly and Senate, the reform had been waiting on a constitutional congress of both houses to become law.

AFP

6.3.1.2 The West Australian – 17 June 2024

16 **NEWS**

The West Australian
Monday, June 17, 2024

Thumbs up, all round

Picture this, a lone man gets in strife in remote WA ....

PHIL HICKEY

It's the photo that confirmed all ended well after what could have been a catastrophic incident in the remote North West of WA.

Police have released new details of the dramatic rescue of a man on Saturday.

The massive emergency mission unfolded in the Kimberley after the man was seriously injured in a wakeboarding accident near the WA and Northern Territory border.

The incident came to the attention of emergency crews about 3.15pm after the Australian Maritime Safety Authority notified WA Police of an EPIRB activation near the Lake Argyle boat ramp.

The EPIRB was activated after a man became tangled in rope while wakeboarding near Lagoon Island, about 25km away from the ramp.

A vessel then returned to the Lake Argyle boat ramp with the man on board.

It was met by Kununurra police officers — who quickly put the injured man into their vehicle and rushed him towards an ambulance that was heading to the scene. In a statement posted on Facebook on Sunday, police said the man was in need of "urgent medical attention".

They posted new details of the rescue, alongside a heartwarming photograph of the relieved man in hospital with the two beaming officers who helped him.

"Due to the urgent need for medical treatment, the police officers placed the injured man in their vehicle and commenced driving back towards the Victoria Highway under emergency conditions, while arrangements were made for them to meet a St John WA ambulance that was enroute to the scene," police said.

"The police officers met the St John WA ambulance near the Dingo Springs Community, and the man was transferred into the care of the ambulance crew.

"He was taken by ambulance the rest of the way to Kununurra Hospital.

"Well done Kununurra Police, and thanks to the patient for allowing us to share this photo."

Stone rolled with his bed

Keith Richards got so out of his mind on tour with the Rolling Stones that he was flown to another country while still in bed.

The guitarist, 80, who used heroin at the height of the band's fame, but has now kicked drugs, drink and smoking, was in such a deep sleep after a drug binge the group's roadies carried the bed, with Keith sleeping in it, onto the band's private jet while he was still resting.

In his new memoir I Was There, celebrity publicist Alan Edwards said Keith woke up in a hotel room in another country.

Vitamin loss no big risk

Doctors should stop testing the majority of adults for Vitamin D deficiency because it does not appear to have any effect on their health, according to research. Instead, GPs should focus on children, pregnant women, adults over the age of 75, and people with pre-diabetes.

Vitamin D deficiency can lead to a soft-bone condition in babies and children, osteoporosis in the elderly and increases the risk of birth complications. While GPs should still advise patients to seek Vitamin D, falling below the recommended amount is unlikely to have any negative impact.

6.3.1.3 Pilbara News – 19 June 2024

8 NEWS pilbaranews.com.au Pilbara NEWS Wednesday, June 19, 2024

Exchanges heated at live export ban probe

OLIVIA FORD

Emotions ran high as stakeholders provided evidence to a parliament inquiry into Federal Labor's live sheep export ban, with heated exchanges between committee members and peak body representatives.

The snap inquiry held its first hearing in Canberra last Wednesday.

A second hearing was held in Northam on Friday before the committee reports back this week.

The Canberra hearing began which questioning to the Department of Agriculture, Fisheries and Forestry, which involved committee member Aaron Violi grilling the Department on its phase-out time frame.

Mr Violi said the Independent Panel Report: Phase Out of Live Sheep Exports by Sea recommended the phase-out be announced at the end of 2023, and for Government to provide support measure in early 2024.

"Given we're in June of 2024, is the phase out not already running seven months behind schedule?"

DAFF's Andrew McDonald said the Government's decision was a result of from the Cabinet and budget process deliberations.

During the hearing, industry bodies were each given half an hour to give evidence to the Parliament's Agriculture Committee.

Australian Veterinary Association head of policy Melanie Latter told MPs of the group's strong support for slaughtering animals as close to production as possible to prevent the stress of travel and handling.

However, she said it represented a "broad church" of veterinarians some who supported and others who were opposed to the live export ban, and that the AVA would remain neutral on the phase-out.

Farmers in Neerabup ahead of the Keep The Sheep rally. Picture: Justin Benson-Cooper

RSPCA chief executive Richard Mussel opened his statement by saying there were serious concerns for sheep welfare around issues with inanition, ammonia exposure, heat stress and stocking density.

Former live export vet Lynn Simpson also gave evidence, and said both the Bab al-Mandab Strait and the Strait of Hormuz had "more dead sheep lay on (its) sea floors then anywhere else I can imagine."

Committee deputy chair Rick Wilson asked Dr Simpson, who conceded she had not been on a live export ship since 2011, if she thought animal welfare standards had improved over the past 14 years.

Dr Simpson said she did not believe so and argued while mortality rates had dropped, morbidity rates had not.

Mr Mussel added to that and said mortality rates were not a "scientific valid" method of measuring welfare.

In his opening statement, National Farmers' Federation deputy chief executive Charles Thomas slammed the Government for treating WA sheep farmers with "absolute contempt".

MPs referenced the growth in WA's boxed meat market and the decline of the live sheep trade over the past decade. Mr Thomas rejected the statement that the industry was decline and referred to the 30 per cent year-on-year increase in live sheep export volumes since 2022 recorded by LiveCorp.

Tensions only further heightened as the day went on and the committee heard from Cattle Australia and the Northern Territory Cattlemen's Association, who both feared live cattle exports would be next on the chopping block.

Sheep Producers Australia chief executive Bonnie Skinner said the live export trade was "necessary" and "critical" in maintaining competition and price stability in the sheep industry.

The hearing hit boiling point when committee chair Meryl Swanson asked Ms Skinner what she had done to help members adjust to a change that may lead to a "potentially better future".

6.3.1.4 Broome Advertiser - 20 June 2024

Broome Advertiser
Thursday, June 20, 2024
broomead.com.au

Crowds enjoy winning day

KATYA MINNS

The Broome Turf Club hosted an exhilarating race day three at the weekend, drawing a lively crowd of punters and fashionistas for the Mark Manado Memorial race.

Adding a touch of glamour to the event, The Broome Closet sponsored the highly anticipated fashions on the field competition and provided generous vouchers for the winner.

Participants dazzled the judges with their creativity and elegance, wearing a variety of stylish ensembles that ranged from classic chic to bold and contemporary.

While the races were the main event, the entertainment did not stop at the finish line as Rob Pascoe and The Turps kept the energy high with their live performances, providing the perfect soundtrack to a day of celebration.

Race day four, Family Day, will be held on June 30.

Fashions on the Field for Broome race day three was sponsored by The Broome Closet.

Holly Chinn, Jason Adkins, Stu Voce, Mel Clothier and Mic.

Steve Shorter, Sally Shorter, Dylan Lowry, Miha Pearce, Kiri O'Neill, Edwina Jones and David Sanderson. Pictures: Katya Minns

Mick Collins and Greg Andrews.

Mya Kordic, Christie Calder, Dean Fulford and Rob Power.

6.3.1.5 Kimberley Echo – 20 June 2024

Thursday, June 20, 2024 kimberleyecho.com.au NEWS 9

connected to the environment he spent most of his life exploring. His last words were to confirm the timing of the New Moon.

On June 6 after a short battle with cancer, Mr Quick died surrounded by family in Cowaramup, aged 62.

When news of his passing broke, an outpouring of tributes from close friends, acquaintances and locals who were touched by his tours was shared.

"Very sad to learn that Greg Quicke 'Space Gandalf' has died . . . I love what he wrote on seeing the solar eclipse in 2023: 'My body spent, my heart full, I crash into a deep eclipse fuelled communion with the other worlds,'" I hope that's where he is now'," Professor Cox wrote on X.

"Oh Greg, an extraordinary life touching so many people the world over," said Broome local Gaye Wolhersgaun, who helped Mr Quicke with his first bookings of Astro Tours. "It was a privilege to share many special moments with you over the years.

"Now one with the universe you loved so much. Tears rolling down my cheeks. We will miss you."

Another close friend, Penny Arrow said: I was lucky enough to spend some cherished time with Greg in the past few months."

On July 5 — a New Moon — there will be a paddle out on Cable Beach, south of the surf hut at 11am, to honour Quicke.

All are welcome and encouraged to bring kayaks or boards.

There will also be a celebration of his life at Gantheaume Beach at 3pm.

Greg Quicke embraced the Kimberley lifestyle. Main picture: Mark Jones

NORTH RANKIN COMPLEX OPERATIONS ENVIRONMENT PLAN

For more than 35 years, Woodside has been developing and operating LNG and oil projects in Australia. Our focus is the safety, reliability, efficiency and environmental performance of our operations and activities.

Woodside consults relevant persons so that feedback is considered and appropriate measures are adopted in response to objections or claims received from relevant persons and used to inform the revision of the **North Rankin Complex (NRC) Operations Environment Plan.**

Our activities

Woodside plans to continue producing dry gas and condensate at the NRC facility and is submitting a five-year revision of the operations Environment Plan. The Environment Plan for NRC Operations will cover routine production, well clean-up as well as inspection, maintenance, monitoring and repair of subsea infrastructure.

The NRC facility is located ~135 km north west of Dampier, Western Australia and began operation in 1984. The facility operates 24 hours a day, 365 days a year.

We are seeking input from relevant persons whose functions, interests or activities may be affected by the proposed activities within the environment that may be affected (EMBA).

The environment that may be affected (EMBA)

The EMBA is the largest area where activities could potentially have a direct or indirect impact. The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan, is determined by a highly unlikely release of hydrocarbons from loss of well control or loss of containment of a pipeline.

The EMBA represents the merged area of many possible paths a 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 whole EMBA will not be affected at one time.

We want to hear from you

If you are an individual, organisation or community group and your functions, interests or activities may be affected by the activities under this Environment Plan, we would like to hear from you by **15 July 2024.**

Want to know more or provide input?

A feedback form and more information can be found at:
www.woodside.com/what-we-do/consultation-activities

You can also subscribe via our website to receive future information on upcoming activities.

E: Feedback@woodside.com
Toll free: 1800 442 977
woodside.com

Woodside Energy

6.3.1.6 North West Telegraph – 19 June 2024

NORTH WEST Telegraph
Wednesday, June 19, 2024
northwesttelegraph.com.au

A billion shades of De Grey

SIMONE GROGAN

De Grey Mining looks set to line up debt to the tune of $1 billion to fund Australia's next big gold mine, but the MD insists they won't just be "sitting still" when construction starts in the next six months.

Despite being years away from pouring first gold, the listed explorer is valued at nearly $2.5 billion, and is chasing down a massive debt component to build a mine out of its famed Hemi discovery in the Pilbara.

Mr Jardine told a packed WA Mining Club event last Thursday that it was expecting to get credit approved terms from commercial banks — potentially up to 10 — in a matter of weeks to bankroll the $1.3b project. Government agencies are also in the mix as potential backers of the project, he said.

With a busy and expensive build-stage ahead — generally considered a vulnerable time for mining companies — Mr Jardine told The West Australian that De Grey would be looking at additional exploration, project studies, and even "potential corporate activity". "We're not going to be sitting still during construction when it comes to value creation," he said.

De Grey has also recently closed the book on another capital raising, this time for $600 million, which will top up its coffers to nearly $900m.

The participation of De Grey's biggest shareholder Gold Road Resources in the May placement sparked much intrigue about the motivations of the listed mid-tier, which has a smaller market capitalisation at about $1.7b.

Gold Road, which had a cash balance of about $143m in February and has long been considered a potential suitor or partner on the Hemi project, let its foothold slip from the takeover threshold of 19.9 per cent to just over 17 per cent.

Mr Jardine told the mining audience it would be best to direct questions as to why to its shareholder, but indicated relations between the companies were positive.

"If you wanted to go any further on that question probably best direct it to Gold Road," he said.

"Gold Road have been very supportive of all of our capital raising since they became shareholders and are also very supportive of the board and management of De Grey." He later said that De Grey hadn't "found anything that can compete" from a shareholder or corporate perspective than going it alone on Hemi.

A final investment decision is expected on Hemi in the second half of this year, to be followed by the start of early works construction, provided environmental approvals fall into place.

Pulling staff away from well-paying iron ore miners in the Pilbara could prove challenging for De Grey, which is on a major hiring spree to find hundreds of workers ahead of construction starting.

The company is banking on a major new gold project bringing diversity to the region, which is best known as the home of the steelmaking ingredient.

Hemi is slated to produce 553,000oz in its first five years.

De Grey Mining chief executive Glenn Jardine at the WA Mining Club lunch in Perth. Picture: Ross Swanborough

6.3.1.7 Koori Mail – 19 June 2024

opinion

Inquiry to test truth-telling

Adam C Lees

RECENTLY, the Queensland Government announced its leadership in its inaugural Truth-telling and Healing Inquiry. The inquiry aims to deepen our understanding of Queensland's shared history, support healing and contribute to Closing the Gap. They'll have their work cut out for them.

Given the failure of the Voice to Parliament proposal, which saw 69% opposition from Queenslanders, the highest of any state or territory, engaging communities in 'truth-hearing' and meaningful dialogue presents a real challenge. The inquiry also risks becoming further politicised ahead of the state elections in October, with critics deeming it a waste of taxpayer funds best directed toward frontline services.

Coupled with this, Victoria's recent rejection of numerous initial recommendations from the Yoorrook Justice Commission has created scepticism, portraying their inquiry as a toothless tiger. Despite any indifference or even disdain towards reconciliation and historical reckonings, this inquiry can be a rear-vision mirror of our past as we drive towards a fairer future.

Queensland's inquiry will rely on its legislated authority to request documents and information from the state and agencies. However, unlike Commonwealth parliamentary hearings, its inability to require evidence from private individuals limits its reach.

Mining has significantly shaped Queensland's physical, social and cultural landscape for over 150 years. For an industry that has historically reaped the benefits of the land, often at the expense of Indigenous peoples, the call for the mining industry to participate in this inquiry should not just be an invitation; it is a moral and ethical imperative they must accept.

Over its three-year term, the inquiry has sufficient material to explore the intersection between mining and Indigenous rights. It should delve into the wealth amassed from mining on Aboriginal land and the failure to fully benefit communities, including the absence of agreements and benefits for older mines and smelters. Furthermore, the inquiry should also look at the negative impacts of mining on Indigenous communities, the destruction of ancient cultural heritage and the historical contamination of water and land.

Consider the state's focus on cleaning up 120 derelict mine sites under the Abandoned Mines Land Program (AMLP) – compared to the 15,300 sites that environmentalists claim need attention, 317 urgently. Abandoned and mismanaged mines present significant risks to people and our environment. The inquiry can push for increased Indigenous engagement in these clean-up efforts, turning neglect into opportunity by involving Traditional Owner enterprises and Indigenous businesses in rehabilitation.

The timing is right. Recent or impending closures of old mines across northern Australia and in Queensland highlight a critical moment for learning and action, such as how industry and government can better prepare for and support Indigenous communities ahead of closure and beyond the life of mine.

Then there's the tangled and uneasy history tied to the allocation of bauxite leases on Cape York in the 1950s. Considering the inquiry, perhaps there's an opportunity for the Queensland government to fully open its archival records, shedding light on the decisions and policies linked to the granting of these mining leases. Many records remain restricted due to commercial and privacy concerns.

Today, the mining sector is a significant employer of Indigenous people in Queensland and across Australia, demonstrating numerous successful agreements, economic advantages and collaborative coexistence. But it can do much better.

Despite long-standing promises and commitments to Indigenous employment and leadership development, most Indigenous employees continue to work on the bottom rungs and in the lowest entry-level roles with mining and resource companies in Australia. In my experience, a lack of accountability has perpetuated a culture of excuse-making. The inquiry must fiercely question why this disparity persists despite decades of operations in Queensland. These outcomes wouldn't be tolerated in many foreign jurisdictions where mining companies are legally bound to meet and report on national employment targets across all levels, ensuring they maximise employment opportunities and economic benefits for local communities.

The inquiry can also play a significant role in opening the lid on mining's connections with Indigenous communities and the state and industry's moral obligations to address historical injustices beyond legal limitations, such as stolen wages. Historical allegations of wage discrimination and underpayment of Indigenous workers within the mining sector warrant a thorough investigation to prevent any continuation of such practices.

If sunlight is the best disinfectant, then Queensland's Truth-Telling and Healing Inquiry presents an immediate opportunity to address past and present uncomfortable truths, and to work towards a more just and equitable future. Mining's future and achieving net zero by 2050 hinges on Indigenous consent, with over half of the world's key mineral projects on their lands. Owning and learning from past deeds can ensure mutual respect and genuine benefits from mining, with Indigenous communities as equal partners.

● *Cape York and Meriam Traditional Owner Adam Lees, raised in the mining town of Mount Isa, has over twenty years of global experience in the resources and energy sector.*

6.3.1.8 National Indigenous Times – 28 June 2024

18 NIT OPINION nit.com.au

Women must be heard

HANNAH MCGLADE

The Federal Government shocked and hurt Aboriginal women across Australia with its announcement on May 28 of an expert panel tasked with conducting a rapid review of violence against women, with a focus on the killings of women, with not one Aboriginal woman as a member of the panel.

Considering Aboriginal women are at exceptionally high risk of violence and even murder and have been standing strong against violence for many decades, this was a serious oversight.

Last week, with no consultation with Aboriginal women, WA Premier Roger Cook and Minister for Prevention of Family and Domestic Violence Sabine Winton announced new family violence laws to include coercive and controlling behaviour, as well as electronic monitoring of high-risk offenders.

Although Aboriginal women in WA are shockingly over-represented as murder victims, very little has been done about this. When the Telethon Kids Institute pointed out nearly a decade ago Aboriginal mothers were 17½ times more likely to be murdered than non-Aboriginal mothers, there was no response by the State.

Black women's lives have mattered so little, and this surely stems from colonisation, brutal and violent, with horrific violence enacted on Indigenous women and children, as well as men.

This violence is still not acknowledged or addressed.

We know Aboriginal women were raped and killed by settlers who acted with impunity and were protected by racist laws that denied women the most basic rights.

Aboriginal men also were enslaved and reduced to beggars in their own lands.

Children were stolen from mothers under genocidal laws.

There is now a contentious issue between Aboriginal and non-Aboriginal women concerning the role of the law in responding to violence.

Aboriginal women and girls have long experienced the violence of the law and State, racism and racial profiling, and don't see laws as the answer to this violence — especially as we know violence in our communities often has its basis in the trauma flowing from the violence of colonisation and the failure of the state to make amends.

We want healing for our women, and for men.

Children need support, not to be taken from their mothers and families.

Many non-Aboriginal women continue to urge more laws, and stronger ones, to address men's violence.

This approach explains new laws prohibiting "coercive control" introduced in Queensland and New South Wales, with WA now following.

The Commonwealth last year also developed guidelines for States concerning their adoption. These largely ignored the concerns of Aboriginal women that police have long mistreated Indigenous women who are likely to be caught by such laws; misidentified as perpetrators rather than victims.

Coercive control laws have come from Scotland and should not have been imported, let alone without serious and respectful conversations as to their translatability to Australia.

Police, like other State institutions, have not tackled systemic racism and how dangerous that is to Aboriginal women.

In WA, the task force on violence — recently concluded — was surprising and disappointing.

The task force was precipitated by murders of Noongar women and led to investment of more than $90 million, but none dedicated to Aboriginal-led responses.

Instead, we saw $55m allocated to police, child protection and corrections staff. Aboriginal women advocates voiced our concerns, pointing to the Aboriginal Family Safety Strategy, with the State responding with $6m allocated last year for Aboriginal programs. This funding was welcome but inadequate considering the extent of the problem.

The Gordon Inquiry more than 20 years ago recommended a "sea change" and investment in Aboriginal community-led responses to family and domestic violence.

This watershed inquiry, sparked by the death of 15-year-old Noongar girl Susan Taylor, laid bare the neglect and failure of State responses and highlighted the importance of Aboriginal community-led responses to family violence.

The State largely ignored the key recommendations and invested instead in police and child protection whose punitive approaches hark back to the Stolen Generations.

Violence against Aboriginal women will never be addressed while Aboriginal women's expertise and leadership is denied and undermined.

Unfortunately, the failure of the Voice referendum leaves our communities vulnerable to continued imposition of government laws and policies that fail to meet our needs and compound violence experienced by Aboriginal women and families.

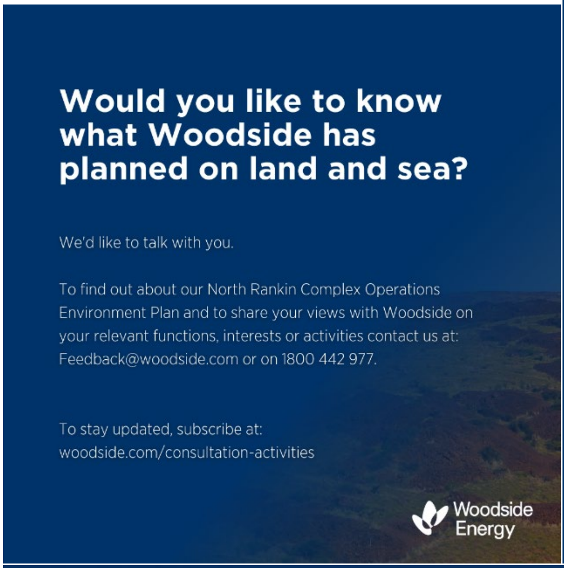
And while the Federal commitment to a national Aboriginal family violence peak body under Closing the Gap is clearly needed, our recent experiences in WA show a statewide peak body is also needed.

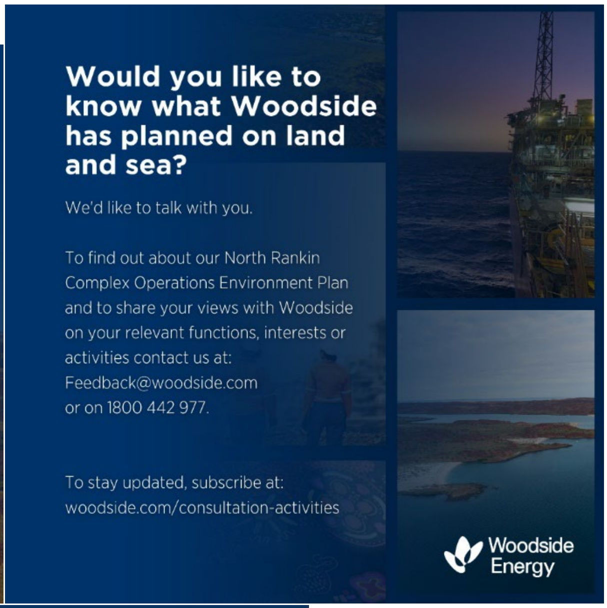
Aboriginal women have experienced so much violence, it's time we addressed all forms of violence, including racism and the imposition of yet more laws that carry unacceptable risk of harm to First Nations women and children.

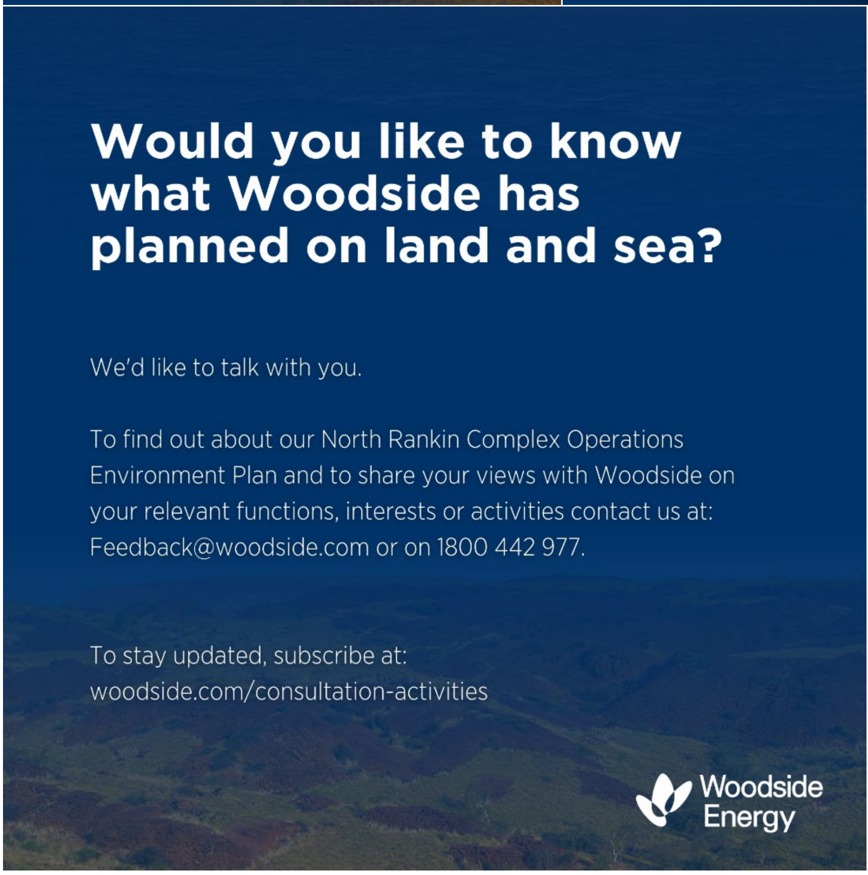
Dr Hannah McGlade is a Kurin Minang human rights expert, law academic and member of the United Nations Permanent Forum on Indigenous Issues.

6.3.2 Social Media EP targeted campaign

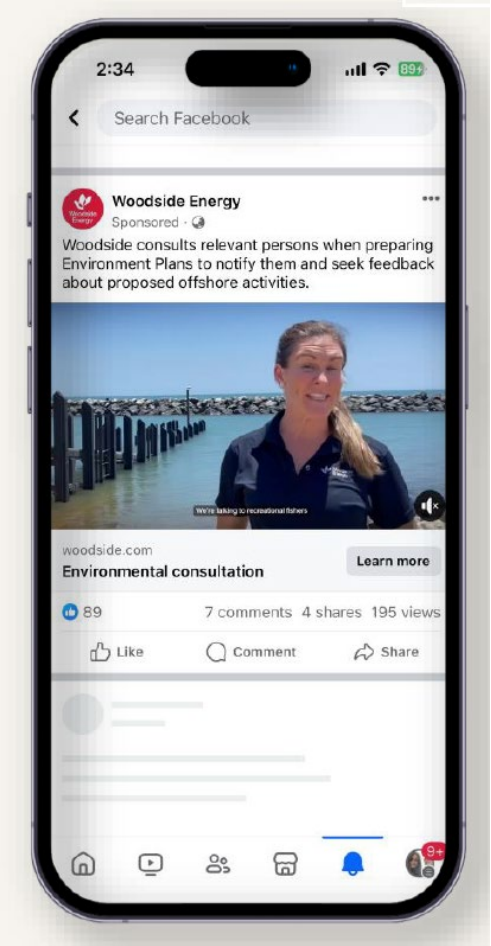
Social media tiles







6.3.3 Are you a relevant person campaign



Are you a relevant person?

You may be a relevant person if you or your organisation have functions, interests, or activities that may be affected by an offshore petroleum activity proposed under an environment plan. Watch the short clips below to find out more.

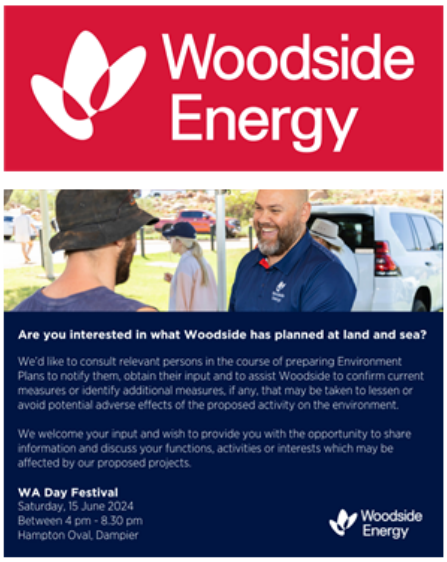
6.4 Community Engagement

6.4.1 Pilbara Region

6.4.1.1 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. Social media posts were published inviting public to attend on Woodside North West Facebook page (**Appendix F, reference 6.4.1.2**). 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).
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**).	

6.4.1.1.1 Social media – 13 June 2024



If you're interested in finding out more about what **Woodside** is doing on land, sea and in the community, stop by and say hi at the **WA Day Festival.**

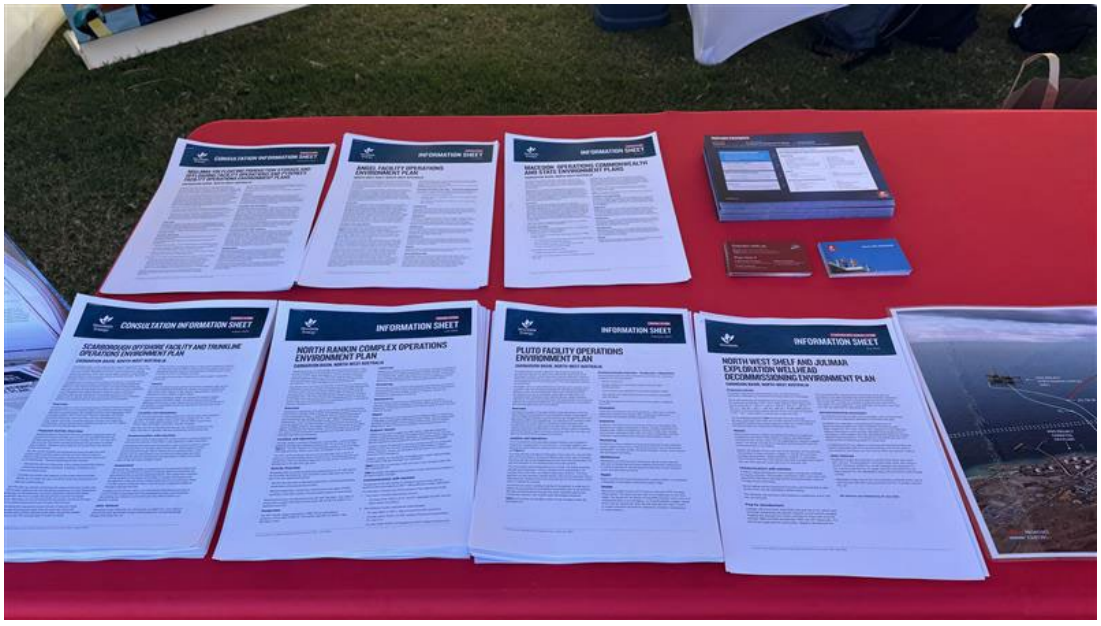
The **free** festival features a drone show display, live music, food stalls, and family fun. As one of the Regional Presenting Partners, Woodside's friendly team will be there to chat about our work in the North West, our current and proposed projects and our Environment Plans.

Can't make it?

Stay up to date with Let's Talk – Our Plans, Your Say or provide your feedback here at the button below.

Feedback Here

6.4.1.1.2 Woodside Marquee – 13 June 2024



6.4.1.2 Pilbara Summit – 26-27 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 6.4.1.2.1)**, 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 on display including 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).

6.4.1.2.1 Woodside stand – 26-27 June 2024

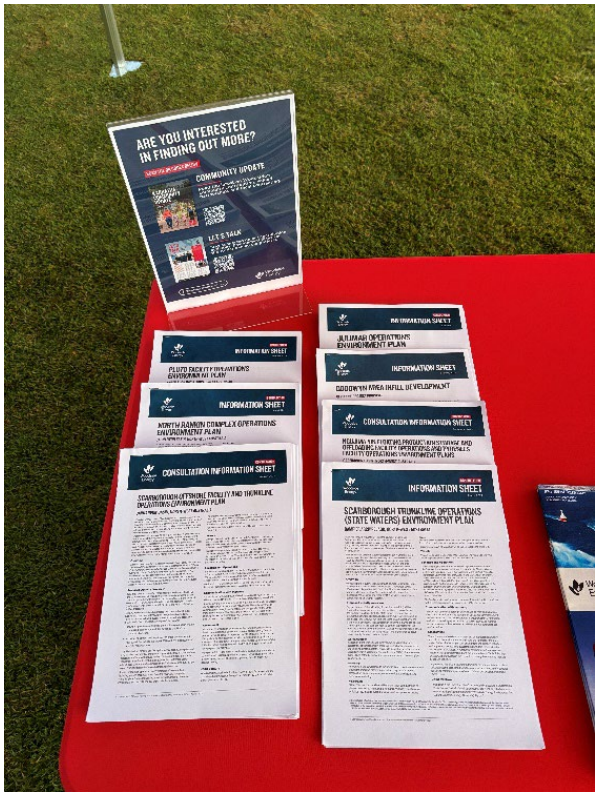
6.4.1.3 Community pop-up at Lo's Cafe – 26 July 2024

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 on display including 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 /	Over 60 community members attended the event. Woodside spoke to many community members, recording 10 meaningful conversations.

organisations consulted	
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).	

6.4.1.3.1 Social media – 26 July 2024

6.4.1.3.2 Woodside Marquee – 26 July 2024

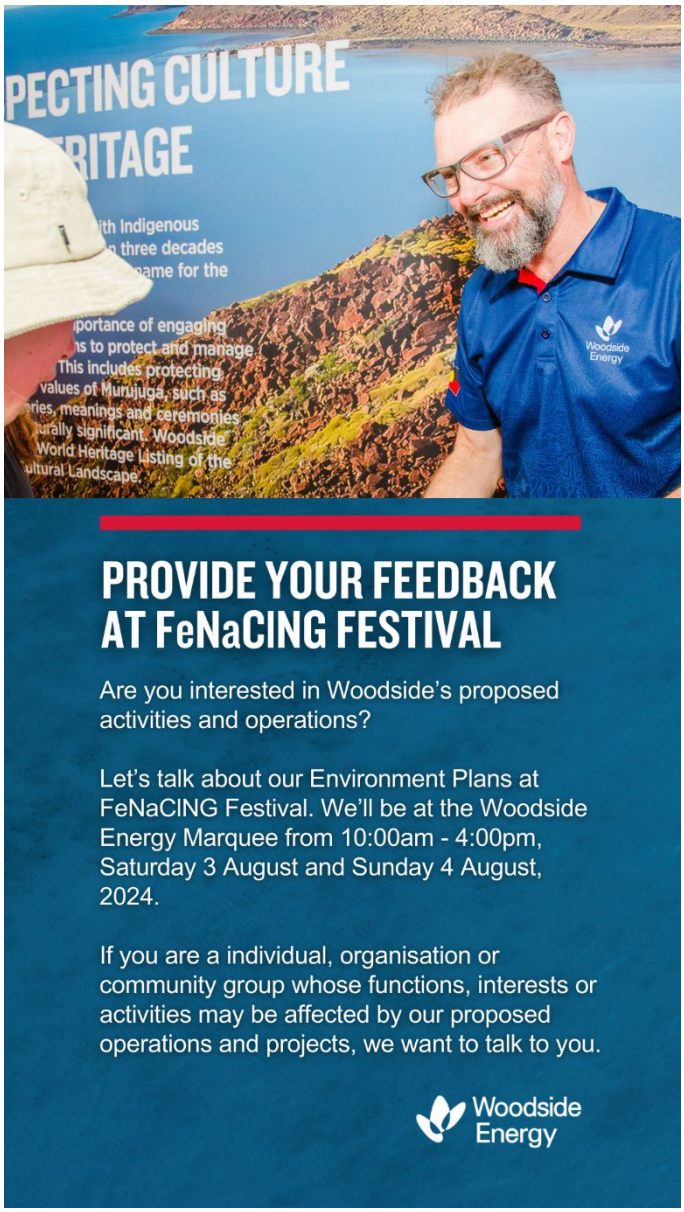


6.4.1.4 FeNaCINg Festival – 3-4 August 2024

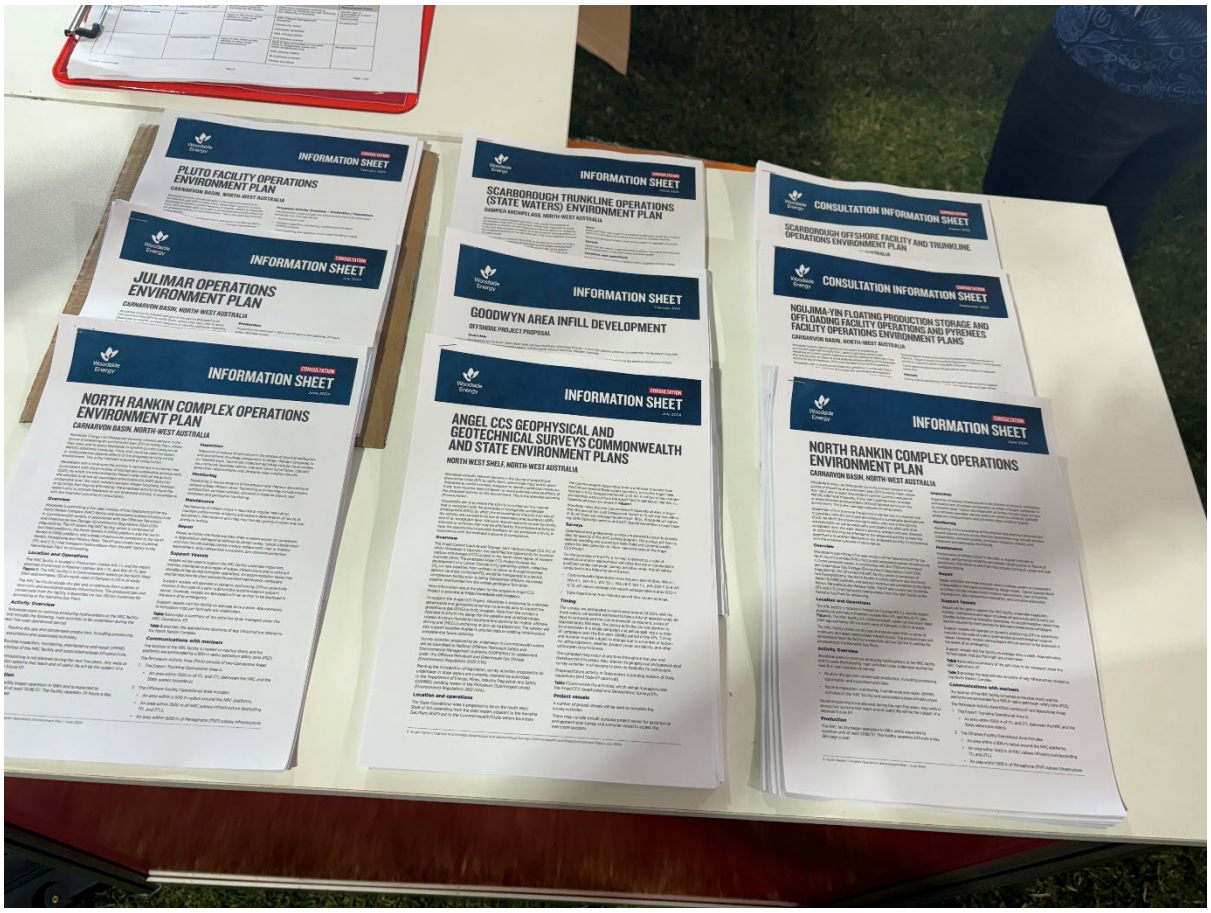
Location	Karratha
Activity	FeNaCING Festival
Date	3-4 August 2024
Description of the consultation	Woodside hosted a stand at the FeNaCING Festival 2024. Members of Woodside's Corporate Affairs and Operations teams actively engaged with the community to discuss proposed Environment Plan activities. Woodside 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 on display, 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 media post was advertised on the City of Karratha and FeNaCING Festival Facebook page on 18 July 2024 (**Appendix F, reference 6.4.414.1**). Social media post was advertised on the Woodside North West Facebook page. An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website), and EP factsheet were displayed at Woodside's stand.
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, 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).	

6.4.1.4.1 Social media – *18 July 2024*

6.4.1.4.2 Social media – *2 August 2024*



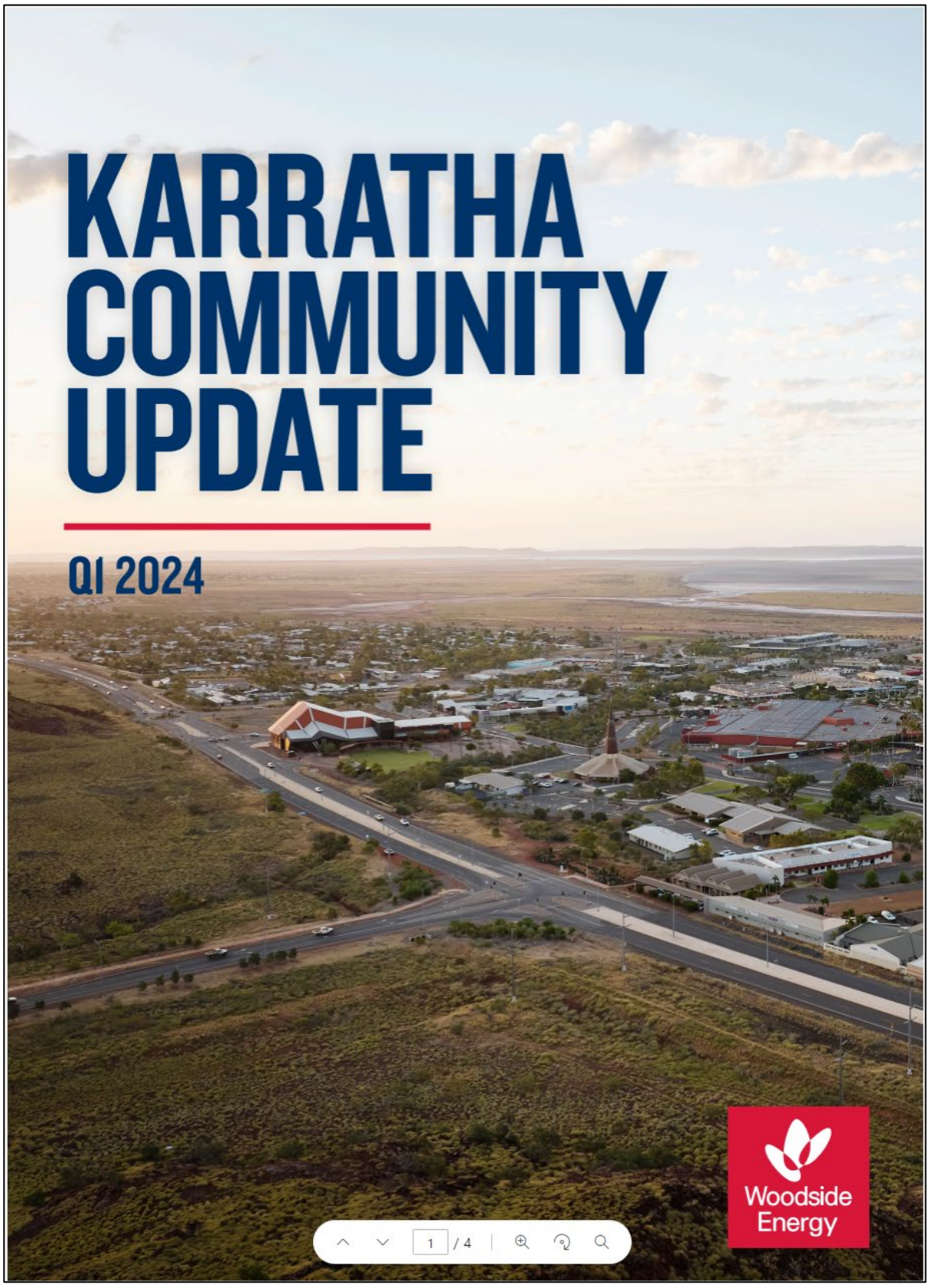
6.4.1.4.3 Woodside Marquee – *3-4 August 2024*



6.5 Community Newsletters

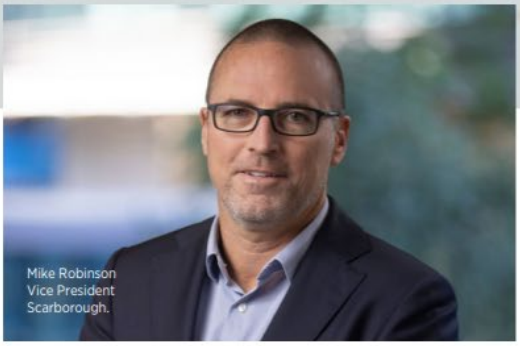
6.5.1 Karratha Community Update

Q1 – 2024



Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's first peoples.

We acknowledge the unique connection of the Traditional Custodians to land, waters and the environment where we operate in the City of Karratha. We extend this recognition and respect to First Nations peoples and communities around the world.



Mike Robinson
Vice President
Scarborough.

The Scarborough Energy Project will see gas from the Scarborough fields piped approximately 430 km to be processed onshore at the Pluto LNG facility, where Pluto Train 2 is currently under construction. Scarborough gas will also be processed through the existing Pluto Train 1 plant following modifications, which are expected to commence in late 2024.

The Project is now more than 55% complete[1], and in March 2024, Pluto Train 2 achieved a key milestone, the arrival of the first modules in Karratha. This year, a total of 51 modules will be delivered to Pluto for installation.

This year, Woodside also celebrates its 70th anniversary and the North West Shelf Project marks 40 years of domestic gas production and 35 years of LNG exports from Karratha. Over this period, we have provided reliable energy to Australia and the world from the community we continue to call home. Karratha is where the Woodside story began and the Scarborough Energy Project will build on the legacy of supporting the world's energy needs from this region.

We are proud of the Scarborough Energy Project and what it will deliver for the Karratha community and the nation.

Mike Robinson
Vice President Scarborough

[1] The completion percentage excludes the Pluto Train 1 modifications project.

Graduating apprentices and trainees at Red Earth Arts Precinct.

Celebrating success: Woodside Training Academy Graduation and Awards

The Karratha Gas Plant-based Woodside Training Academy has seen more than 750 apprentices and trainees commence their learning journey with Woodside since it opened its doors in 2010.

The Academy plays an integral role in hosting those who are building their employable skills and experience, supporting the development of local workforce capabilities.

This March, Woodside welcomed 21 apprentices and trainees into roles across its Burrup assets. The Woodside Training Academy Graduation and Awards held at Red Earth Arts Precinct saw the graduating cohort celebrated for their achievements in completing their training. The event also recognised and awarded the outstanding performance of particular individuals throughout their training process. The award recipients were selected for their dedication, commitment and consistent demonstration of Woodside's values.

An additional 33 apprentices, trainees and pre-pathway trainees, including 17 school leavers from the Karratha area, have been recruited by Woodside's training partner, Programmed Training Services and are being hosted by Woodside in 2024. We're proud to have close to 100 apprentices and trainees learning their craft at the Woodside Training Academy and offshore assets this year.

Scan the QR code or click here to get to know a few of Woodside's new team members.

Woodside extends investment in education initiative

Woodside was recently joined in Karratha by the WA Minister for Education Dr. Tony Buti MLA and Kevin Michel MLA to share news of our ongoing collaboration with schools in the local community.

Together with our joint venture partners, we were pleased to announce our extended support for education in the City of Karratha after signing five-year community partnership agreements for the ongoing delivery of the Karratha and Roebourne Education Initiative (KREI).

The extension builds on more than 15 years of investment by the Woodside-operated North West Shelf Project to bridge the gap between the opportunities and resources available to students residing in the Pilbara and their metropolitan peers, and support students on their pathway to employment.

The renewed agreements with the Department of Education and St Luke's College increases funding provided for programming at local high schools and extends that support to primary schools in the community.

The funding will enable the delivery of quality educational opportunities, including ATAR revision seminars, additional STEM curriculum, student leadership programs, employment and career pathway planning, and teacher development.

Western Australia's Minister for Education, Hon Dr Tony Buti MLA, said he is thrilled support for the Initiative will continue for years to come, benefitting even more students in the Pilbara.

"It has proved to be a very successful partnership over the years helping many students achieve their best and guiding them to a range of careers," Minister Buti said.

Woodside CEO, Meg O'Neill, said the renewed agreements reflected Woodside's commitment to improving capability and capacity in its host communities.

"The Initiative has delivered strong educational outcomes and its success is a testament to what can be achieved when we work collaboratively with a student-centred approach," she said.

Baynton West Primary School Principal Lisa Ledger, WA Minister for Education Hon Dr Tony Buti MLA, Woodside Energy Corporate Affairs Manager North West Amanda Fuery, Pilbara Education Regional Office Program Coordinator Amanda Lawrence, Member for Pilbara Kevin Michel MLA and students from Baynton West Primary School.

Apprentice takes home Citizen of the Year

Meet Rhian. She's a fourth-year, Programmed Electrical Instrumentation Apprentice at Karratha Gas Plant and was recently named the City of Karratha's Citizen of the Year.

Rhian joined the Karratha Volunteer Fire and Rescue Service to meet people and make friends when she first moved to Karratha. She now holds a senior position and is on-call 24/7 with requests for jobs, including road crash rescues, house fires, HAZMAT incidents and assisting the local police.

But Rhian's contribution to the community doesn't stop at fire and rescue. Five years ago, she joined St John Ambulance as an Emergency Medical Technician volunteer.

She's attended more than 800 jobs in and around Karratha, and she also helped at the 2019-2020 Black Summer fire in QLD. Rhian also volunteers at community events like Speedway, Karratha's FeNaCING festival, Santa lolly runs, youth cadets and school visits.

"I just love giving back to the community and helping people in times of need. It's what I enjoy doing in my spare time. Some people play sport. I volunteer," said Rhian.

Electrical Instrumentation Apprentice and City of Karratha Citizen of the Year, Rhian

Indigenous Collegiate leads cargo loading

As the Woodside-operated North West Shelf Project prepares to mark 35 years of delivering LNG cargoes to our international customers, another achievement was recently recognised at Karratha Gas Plant.

In January, an LNG cargo was loaded at Karratha Gas Plant's berths by a team made up entirely of Indigenous employees.

The team consisted of nine members from Storage and Loading, including Operations Support Trainees through to Maintenance Technicians and Supervisors. The vessel was also piloted by Woodside and Australia's first Indigenous master mariner.

Woodside's Indigenous Liaisons Coach, Josh Hill, said the activity demonstrated the progress Woodside has made in creating employment opportunities for First Nation's people.

"It was inspiring to see and reflects Woodside's work to increase Indigenous recruitment and provide career support for members of the Indigenous Collegiate," he said.

3

Pluto Train 2 modules arriving in Karratha.

Making significant progress on the Scarborough Energy Project

The Scarborough Energy Project's Pluto Train 2 achieved a major milestone with the first three modules now safely installed on site in Karratha.

The modules, which arrived in February 2024, weigh a combined total of more than 4,000 metric tonnes, equivalent to the weight of 30 houses or 24 Boeing 787 Dreamliner aircraft. The modules were transported from Pilbara Ports to the construction site at the existing Pluto LNG facility using 21 specialised hydraulic transporters with 126 axles and 504 wheels.

Our CEO, Meg O'Neill, said the delivery of the first Pluto Train 2 module was a key milestone towards the delivery of the Scarborough Energy Project, which will help meet the growing demand for the low-cost, lower-carbon, reliable energy the world needs today and into the future.

"The safe and timely arrival of the module is a testament to the hard work and dedication of the Woodside team and our lead contractor Bechtel," she said.

The Scarborough Energy Project will contribute significantly to the Australian economy and create thousands of job opportunities during its construction phase.

The Project is already benefiting local Karratha businesses, including almost 30 Indigenous businesses that have been engaged. It is also supporting Woodside's investment in social contribution partnerships that provide positive impacts for those living in the Karratha community.

Scan the QR code or click here to see the arrival of the modules in Karratha .

Local businesses set to benefit from the Scarborough Energy Project

The Scarborough Energy Project, including Pluto Train 2 is providing opportunities for local businesses in Karratha. To date, with collaboration from Woodside's construction partner Bechtel, the Project has injected more than $90 million locally and contracted with close to 70 Karratha businesses.

Local, family-owned business, ATOM is one of these businesses. ATOM was recently awarded a contract to supply industrial consumables, safety supplies and personal protective equipment products for the Pluto Train 2 construction.

ATOM believes locals serve locals best, which is why their 22 employees supporting the project are all local to Karratha. Nearly half of the team are female and there is one Indigenous employee.

The contract has supported ATOM to expand its workforce increasing local employment opportunities.

Long-term, it's estimated Pluto Train 2 will sustain around 600 roles, once the project is operational, across Western Australia, including 70 residential positions in Karratha.

Like Woodside, ATOM is a nationwide company, with roots in Western Australia. ATOM opened its Karratha branch in 1980, where during the same decade, we commissioned the North West Shelf Project.

ATOM also shares Woodside's commitment to invest where we operate, building meaningful relationships and supporting our local community.

Phil Donders, National Team Leader of ATOM said, "At ATOM, we believe in investing in the success and sustainability of the communities we operate within. This is why ATOM welcomed the opportunity to support the Pluto Train 2 Project through the supply of industrial consumables and PPE."

Darren Wilson, ATOM Karratha Branch Manager.

Would you like to know what Woodside has planned on land and sea?

Click here or scan the QR code to subscribe to our newsletter Let's Talk – Our Plans, Your Say and to receive updates on our consultation activities.

6.5.2 Let's Talk – Our Plans, Your Say

6.5.2.1 Let's Talk *April 2024*

Hard copy distribution – *April 2024 edition*

Date (2024)	Location	Event (if applicable)
April	Perth	Woodside AGM
April/May/June	Karratha	Woodside Visitor Centre
May	Perth	WAFIC Award Night
May	Karratha	KDCCI Business Breakfast Briefing
May	Karratha	Community markets
May	Karratha	Employees at the Woodside Karratha Gas Plant
May	Onslow	Community information night
May	Exmouth	Community markets
May/June	Perth	Employees at the Woodside MY Building Woodside Annual General Meeting

Let's Talk April 2024 edition

LET'S TALK

EDITION 2 | APRIL 2024

OUR PLANS, YOUR SAY

Woodside Energy

THE RUNDOWN

On 1 March 2024, Woodside received Commonwealth environmental acceptance for the Griffin Field Decommissioning (End State) Environment Plan, supporting the staged decommissioning program for the Griffin oil and gas field, located off the Western Australian (WA) coast 65 km north-west of Onslow and 94 km north-east of Exmouth.

During late 2023, Woodside received acceptance for other Griffin decommissioning activities, with several activities already safely and successfully completed.

WHAT IS DECOMMISSIONING?

Decommissioning involves managing infrastructure that is no longer required in a timely, safe, and culturally and environmentally responsible manner.

GRIFFIN FIELD – FAST FACTS

- Field discovered 1989
- Production period 1994 – 2009
- Gas produced for the WA domestic gas market - 62 billion cubic feet
- Barrels of oil produced - 167 million

Griffin gas export pipeline removed safely, offshore from Onslow

Woodside recently completed staged decommissioning activities under the Griffin Gas Export Pipeline (GEP) Decommissioning Environment Plan, which was accepted on 30 November 2023. Woodside removed ~25 km of the pipeline offshore within Commonwealth waters at depths ranging from 52 m to 127 m, approximately 41 km north-west of Onslow.

During production, the 62 km long and 30 cm in diameter Griffin GEP transported gas from the field to the former onshore Griffin gas export facility south of Onslow for use by WA businesses and households.

The decommissioning of the pipeline's WA State waters section and related onshore infrastructure requires separate state approvals. Woodside will engage local stakeholders to understand their views on potential decommissioning options for this pipeline portion.

Woodside is now undertaking a post-removal assessment of the Commonwealth section of the Griffin pipeline to inform future decommissioning activities in the region. Woodside will continue to assess decommissioning options case-by-case, guided by science, consultation, and legislative requirements.

NINGALOO OUTLOOK SYMPOSIUM

To increase the ecological understanding of the Ningaloo Coast World Heritage Area's deep and shallow reefs and shark and turtle populations, Woodside and CSIRO have partnered on the Ningaloo Outlook Marine Research Partnership.

For Ningaloo Outlook (Phase 1 and 2) over A$12million has been invested in scientific research to further develop new knowledge about the Ningaloo Coast World Heritage Area. The initial Phase 1 was in partnership with BHP, now part of the merged Woodside Energy.

The 300 km long Ningaloo Reef is the largest fringing coral reef on the west coast of any continent. With shallow lagoons and deeper waters offshore, the reef is home to a variety of marine life and diverse habitats.

The sixth **Ningaloo Outlook Symposium** recently enabled marine park managers, the scientific community and interested stakeholders to discuss the partnership's 2023 research findings.

Click here to view footage shown at the 2024 Ningaloo Outlook symposium.

To stay updated, subscribe for future editions at
woodside.com/what-we-do/consultation-activities

COMMUNITY SPOTLIGHT

Support for Murujuga

Woodside is proud to be a signatory of Murujuga Aboriginal Corporation's (MAC) Statement of Intent as part of our unwavering support for World Heritage Listing over the Murujuga Cultural Landscape, and our ongoing support for the protection and management of Murujuga's outstanding heritage values. We are committed to and support the protection of Aboriginal cultural heritage and continue to work closely with Traditional Custodians in the areas we operate.

Woodside was one of 11 signatories to the MAC Statement of Intent at a ceremony held at Hearson Cove on Murujuga Country. Other parties to the Statement of Intent included MAC (as the representative body for five Traditional Custodian groups, being Ngarluma, Yaburara, Yindjibarndi, Mardudhunera and Wong-Goo-tt-oo peoples), the Government (Premier, Environment Minister and Aboriginal Affairs Minister), Commonwealth Government (Environment Minister), Rio Tinto, Pardaman, Yara Pilbara, Horizon Power and the City of Karratha.

The Statement of Intent sets out the guiding principles for MAC, government and industry parties to work together to negotiate a cooperative Strategic Head Agreement in relation to the management, protection, and conservation of the Murujuga Cultural Landscape in support of the World Heritage nomination of this landscape.

Woodside takes its responsibility to protect and manage cultural heritage seriously, including through taking reasonable and practical measures across our operations and growth projects to minimise our emissions.

TALKING POINT

Supporting Science at Scott Reef

Out on the edge of Australia's continental shelf sits the north and south reefs and sandy islet of Scott Reef.

Located about 425 km north-west of Broome, to reach Scott Reef a boat would need to travel from the closest point on the WA coast for 270 km across the Indian Ocean.

Scott Reef and other reefs in the Pilbara and Kimberley were considered "poorly understood" by the Australian Institute of Marine Science (AIMS) three decades ago. However, over the last 30 years, more than 50 expeditions by numerous marine scientists have led to extensive research and understanding of Scott Reef.

In 1993, Woodside supported AIMS' extensive survey of coral and fish communities. This led to the establishment of a long-term monitoring program in 1994, which continues today. The Scott Reef coral reef monitoring program is globally one of the few continuous programs providing insight into the health and condition of resident corals and fish.

Woodside partnered with the WA Museum in 1998, contributing to research on oceanography and the biology and ecology of the resident species. The partnership has enabled long-term research to understand the reef's health and how it changes through time. WA Museum scientists visited Scott Reef in 1984 to carry out extensive surveys to sample fauna. Then, in 2006 returned with Woodside's support and catalogued 1,897 marine life species, including 262 new discoveries.

The WA Museum partnership included the Woodside Collection Project, focused on the marine life of the Dampier Archipelago and Kimberley. Over 55,000 specimens were collected and 700 new species were identified as part of the large Australian biodiversity project.

The wide-ranging Scott Reef research projects have revealed important insights into a complex ecosystem and have delivered a wealth of knowledge to support Woodside's long-term environmental planning and management.

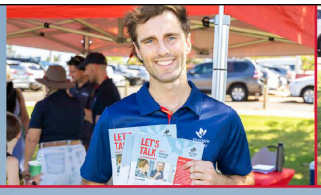
Woodside is consulting on the Browse State Wellhead Decommissioning Environment Plan (EP), involving decommissioning options for three historical wellheads in WA State waters, approximately 430 km north of Broome. **View the consultation information sheet.**

In preparing the EP, Woodside's intent is to minimise environmental and social impacts and is seeking stakeholder input to inform Woodside's development of the EP.

Click here to watch Journeys of Discovery - Coral Reefs.

Join the conversation at **woodside.com/what-we-do/consultation-activities**

COMMUNITY CONVERSATIONS



Upcoming engagement opportunities

DAMPIER
5 May 2024 | 9:00am - 12:00pm
Dampier Beachside Markets, Hampton Oval

EXMOUTH
19 May 2024 | 8:00am - 12:00pm
Exmouth Community Markets, Federation Park

Dates and times subject to change.

Woodside is consulting with local communities at local events so you can easily come and chat us to us about our operations, decommissioning activities, or proposed projects.

Recently our team talked with community members at the Karratha Shopping Centre and the Dampier Beachside Markets about Environment Plans for the Scarborough State Trunkline Operations and Pluto Operations. We also meet quarterly with Community Liaison Groups in Karratha and Exmouth where we communicate updates and consult with community members on a range of relevant topics.

If you're interested in what Woodside has planned on land and sea, come and chat to our friendly team and follow the **Woodside North West Facebook page** for updates. You can also read our recent **Karratha Community Update here.**

HAVE YOUR SAY

Woodside consults relevant persons while preparing our Environment Plans to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse impacts of the proposed activity on the environment.

We welcome your input so please contact us if you'd like to discuss your functions, interests or activities which may be affected by our proposed activities.

Environment Plan	Activity Type	Location	Consultation Dates
Browse State Wellhead Decommissioning	Decommissioning	430 km north of Broome	25 March – 3 May 2024
North Rankin Complex Operations	Operations	135 km offshore of Dampier	- May – - June 2024
Angel Carbon Capture and Storage Geophysical and Geotechnical Surveys	Survey	125 km north-west of Dampier	-May – June 2024
North West Shelf Phase 1 Plug & Abandonment	Decommissioning	~117 km north-west of Dampier	-May – June 2024
Julimar Operations	Operations	160 km north-west of Dampier	-May – June 2024

You can access our consultation information, provide feedback and subscribe for updates by visiting **www.woodside.com/what-we-do/consultation-activities** or click **here.**

PROGRESS SNAPSHOT

Environment Plan	Activity Type	Date Accepted	Status
Griffin Field Decommissioning (End State) (Griffin Field Deviation / Griffin Leave In-situ)	Decommissioning	1 March 2024	In progress
Stybarrow Decommissioning and Field Management	Decommissioning	8 January 2024	In progress
Stybarrow Plug and Abandonment	Decommissioning	21 December 2023	In progress
WA-34-L Pyxis Drilling and Subsea Installation (Revision)	Project	21 December 2023	Drilling to commence around May 2024
Scarborough Seabed Intervention and Trunkline Installation	Project	13 December 2023	In progress
Scarborough WA-61-L and WA-62-L Subsea Infrastructure Installation	Project	8 December 2023	In progress
Scarborough Drilling and Completions	Project	1 December 2023	In progress
Griffin Gas Export Pipeline Decommissioning	Decommissioning	30 November 2023	Completed
TPA03 Well Intervention	Project	28 November 2023	In scheduling
Griffin Decommissioning and Field Management	Decommissioning	21 November 2023	In progress

You can view Commonwealth Environment Plans for approved activities and operations by visiting NOPSEMA's website **info.nopsema.gov.au/home/approved_projects_and_activities**

LET'S TALK

EMBAs AND OIL SPILL MODELLING

Let's talk about EMBAs – what they are, and just as importantly, what they're not.

When Woodside talks to community members about our activities, we're often asked about the areas marked on our consultation material referred to as the "Environment that May Be Affected" (EMBA).

EMBAs are an important part of preparing the environmental and emergency response strategies that underpin the planning for our offshore activities.

They are produced as part of our extensive oil spill modelling and response planning. They represent the largest spatial area where a petroleum activity could potentially have a direct or indirect environmental impact.

Understanding the EMBA

The EMBA represents the largest, merged area of many potential paths that a highly unlikely oil spill could travel based on predictions around weather, currents, and other conditions at the time. An EMBA is not a predicted impact of a single oil spill, which would be much smaller, and the extent and path of the impact would only be known at the time it occurred.

This means the area the EMBA covers includes locations where planned activities and unplanned events could potentially occur.

Oil Spill Modelling

While offshore oil spills are extremely rare, it is important oil and gas companies are still ready to prepare for and respond to them. There are several different approaches to oil spill modelling, and Woodside uses these in combination for information about where an oil spill could move, how quickly, and the possible effect of using methods to manage a potential oil spill.

To calculate this, our oil spill modelling involves running many (sometimes hundreds) computer simulations of the same scenario to predict the behaviour of oil under different conditions.

Each simulation is subject to a range of variables, including weather and sea conditions, tides, and times of year. In the model, the oil responds to these conditions and behaves differently in each individual simulation.

Every individual simulation is overlayed on top of the next, allowing statistical analysis of the possible area the oil spill could travel in the highly unlikely event that a spill occurs. The smooth boundary drawn around all these computer simulations of the spill creates the EMBA.

The models process the information based on an assumption there is no emergency response, which would of course not be the case in a real emergency.

Oil spill modelling helps us develop our oil spill emergency management plans and assists in preparedness and response planning. Woodside conducts regular emergency response training exercises involving multiple facets of the business so our teams are ready to respond should they ever need to.

The many simulations used to underpin our planning are estimates and predictions only. It is not possible to exactly predict the outcome until the exact weather and other conditions are known if an oil spill event occurs.

Emergency Management Plans

The emergency management plan informed by the oil spill modelling is submitted to both State and Commonwealth regulators for approval along with all other planning documents for our activities.

Woodside, in more than 60 years, has not experienced any significant uncontrolled release of oil or gas to the environment as a result of loss of well control.

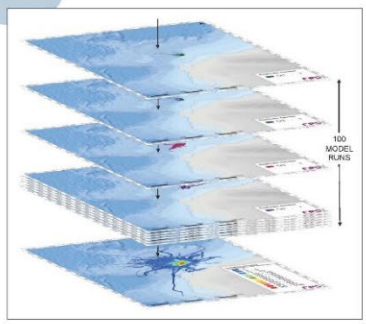


Figure 1: The first stage in EMBA creation is running computer simulations (model runs). Figure 1 shows the model runs for the WA-34-L Pyxis Drilling and Subsea Installation Environment Plan.

Nevertheless, our extensive planning continues, drawing on international good practice, so the impacts and risks associated with our activities are detailed, evaluated and managed to a level that is as low as reasonably practicable.

We are committed to continuous improvement and share our expertise with our peers and take the lessons learned from other operators to incorporate into our management processes.

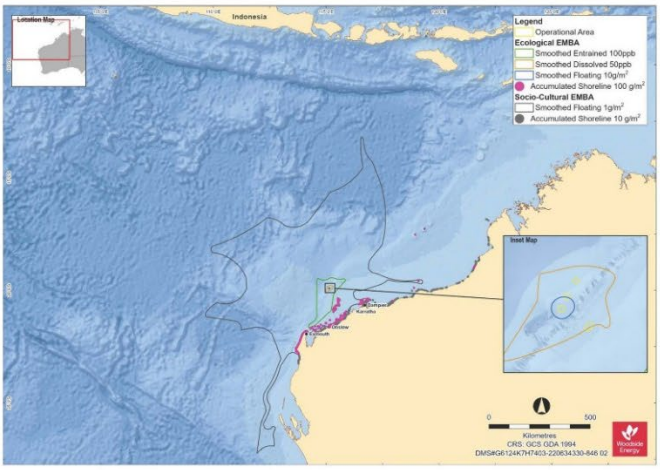
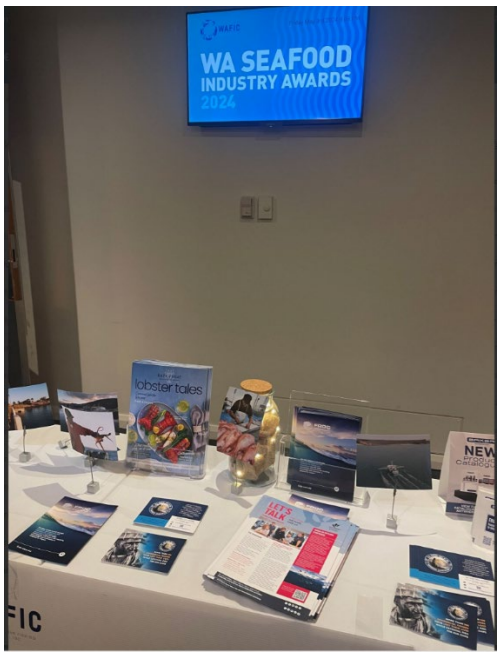


Figure 2: The EMBA is a culmination of all the computer simulations with a smooth boundary. Figure 2 shows the final EMBA for the WA-34-L Pyxis Drilling and Subsea Installation Environment Plan.

Join the conversation at **woodside.com/what-we-do/consultation-activities**

Events – *April and May 2024*



6.5.2.2 Let's Talk *July 2024*

Hard copy distribution *July 2024*

Date (2024)	Location	Event (if applicable)
June	Dampier	WA Day Celebrations
June	Karratha	Pilbara Summit
July	Karratha	Community pop-up at Lo's Café
August	Karratha	FeNaCING Festival
June/July/August	Karratha	Woodside Visitor Centre

Let's Talk July 2024 edition

LET'S TALK

EDITION 3 | JULY 2024

OUR PLANS, YOUR SAY

Woodside Energy

THE RUNDOWN

Woodside Energy Chief Executive Officer and Managing Director Meg O'Neill has said gas producers are ready to work with government to deliver new supplies critical to the energy transition as she highlighted the importance of removing barriers to investment.

On 21 May 2024, welcoming the release in May of the Federal Government's Future Gas Strategy, Ms O'Neill said it provided a clear statement about the critical role gas plays in Australia's economy and will continue to play in the future.

A key point the Strategy makes is that new sources of gas will be needed to meet demand during the energy transition.

Addressing an Australian Energy Producers (AEP) Conference, Ms O'Neill, who is also AEP Chair, said:

"I am pleased the Government is talking about solutions. The industry is ready to roll up our sleeves and work with the Commonwealth to achieve a solution to a shortage which is supply.

"We welcome acknowledgment in the Strategy that we'll need the right regulatory settings to do so.

"Indeed, the success of the Strategy will be measured by whether it delivers policy reforms that address the barriers to new gas supply and investment."

She said the recent passage of Federal legislation relating to the Petroleum Resource Rent Tax (PRRT) had provided certainty.

The changes bring forward PRRT payments from LNG projects. However, in order to facilitate the PRRT payment amendments, the government held off passing other amendments designed to clarify ambiguity around consultation requirements for environmental approvals.

"This helps us make future investment decisions. But it has come at the expense of addressing the ambiguity in the consultation process for offshore approvals," Ms O'Neill said.

"Leaving this issue unresolved makes the timely development of new energy supply more difficult."

"The industry stands ready to work with the Government to progress these necessary reforms as soon as possible," she said.

WAFIC SEAFOOD AWARDS

Endeavour Foods General Manager Sophie Sharland's empowerment of future leaders in the seafood industry was recognised in early May when she received the Young Achievers Award, sponsored by Woodside Energy, at the 2024 Western Australian Seafood Industry Awards.

This event, hosted biennially by the Western Australian Fishing Industry Council (WAFIC), acknowledges the innovations and achievements within the WA seafood industry.

The Young Achiever Award is one of 14 categories and focuses on individuals who demonstrate positive impacts to the seafood industry.

Sophie is a shining example of the growing number of talented young women working in the commercial seafood industry.

Jo Ferrie, Head of Communities and Social Performance, Woodside Energy and Young Achievers Award recipient, Sophie Sharland.

To stay updated, subscribe for future editions at
woodside.com/what-we-do/consultation-activities

COMMUNITY SPOTLIGHT

Karratha Signs

The Scarborough Energy Project will provide a boost to the WA economy and communities, growing jobs and bringing work through the supply chain.

Karratha Signs is one of more than 75 local Karratha businesess who have been working on our Scarborough Energy Project.

Started by Jed and Suzy Griffiths in 1999 in the third bedroom of their home, they have grown to be an award-winning enterprise that operates from premises in Karratha and Port Hedland.

Karratha Signs has designed and manufactured an array of site entry, safety and wayfinding signage for the Pluto Train 2 Project and has been vendors with Woodside since 2022.

Working with Karratha Signs provides Woodside with premium products suited to the Pilbara. The company invests in top-of-the-range equipment to ensure a professional, high-quality result every time.

Using local businesses which understand the areas in which Woodside operates ensures the best possible standards and expertise on the job.

Jed Griffiths said there was a sense of community among the employees on the Pluto Train 2 project.

"We work closely with many different people throughout the company to provide locally made signage that suits their individual requirements. Every member we've spoken to has been open-minded to new signage ideas and eager to assist in the process," Jed said.

"The Pluto Train 2 contract has enabled us to open our doors to more clients – both big and small. We've been able to demonstrate the depth of our professionalism to other high-end customers and ultimately expand our client base."

Click **here** to learn more about Karratha Signs and their work on the Scarborough Energy Project.

TALKING POINT

National Energy Technician Training Scheme

A talk at Exmouth High School on the National Energy Technician Training Scheme (NETTS) inspired Taj, an Exmouth local, to apply for an Electrical Instrumentation apprenticeship.

NETTS is a collaboration between Programmed and several energy organisations including Woodside, to develop skilled workers for the future. It's part of Woodside's commitment to local recruitment and providing opportunities to the communities in which we operate.

The first 12 months of the four-year apprenticeship is based in a structured learning environment to provide apprentices with the skills, knowledge and experience required to transition into an onshore or offshore role. Apprentices are taught a variety of life skills designed to prepare them for the transition from school to the workplace.

Taj spent 12 months training at the Australian Centre of Energy and Processing Training and is now offshore at the Woodside-operated Ngujima-Yin, Floating Production Storage and Offloading oil production facility, located 50 km northwest of Exmouth. Taj will work offshore swings and continue his TAFE courses in Perth.

Taj is one of twelve young people currently being hosted by the Woodside NETTS apprenticeship program which has a 98% apprentice retention rate, and in line with Woodside's commitment to inclusion and diversity, First Nations apprentices account for more than 25% of the intake and around 33% are female.

"I've started learning about basic electrical work and it's been interesting, I'm enjoying it. I'm keen to expand my knowledge and ultimately, finish this apprenticeship and hopefully work for Woodside for a decent amount of time and get back up North." Said Taj, NETTS apprentice.

This story demonstrates just one of the ways our operations and projects continue to enable us to make a difference, both in this community and across the state.

Read our 2023 North West Australia Community Development Report to learn more.

Billie the dog watching over Taj enjoying days off

Join the conversation at **woodside.com/what-we-do/consultation-activities**

COMMUNITY CONVERSATIONS

Woodside consults with local communities at local events so you can easily come and chat to us about our operations, decommissioning activities, or proposed projects.

Recently our team talked with community members at the Pilbara Summit in Karratha, Dampier Beachside Markets, WA Day Festival in Dampier, Exmouth Community Markets and the Onslow community information night.

We also meet quarterly with Community Liaison Groups in Karratha and Exmouth where we communicate updates and consult with community members on a range of relevant topics.

If you're interested in what Woodside has planned on land and sea, come and chat to our friendly team. Visit us at:

FeNaCIng Festival 3rd and 4th of August, Bulgarra Oval, between 10 am and 4 pm.

You can also read our recent Karratha Community Update **here.**

STAY UP TO DATE ON OUR CONTINUED CONTRIBUTION TO THE COMMUNITY WE CALL HOME.

SEARCH ON FACEBOOK
WOODSIDE NORTH WEST

HAVE YOUR SAY

Woodside consults relevant persons while preparing our Environment Plans to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse impacts of the proposed activity on the environment.

We welcome your input so please contact us if you'd like to discuss your functions, interests or activities which may be affected by our proposed activities.

Environment Plan	Activity Type	Location	Consultation Dates
North Rankin Complex Operations	Operations – 5 yearly review	~135km north-east from Dampier	19 June – 19 July 2024
Angel Carbon Capture and Storage Geophysical and Geotechnical Studies (Commonwealth and State EPs)	Surveys	~9 km north-east of Dampier (State EP) ~ 35 km (closest survey points) - ~140 km (furthest survey point) north of Dampier (Commonwealth EP)	8 July – 9 August 2024
Julimar Operations	Operations – 5 yearly review	~160km north-west of Dampier	15 July – 16 August 2024

You can access our consultation information, provide feedback and subscribe for updates by visiting: **www.woodside.com/what-we-do/consultation-activities**

PROGRESS SNAPSHOT

Environment Plan	Activity Type	Date Accepted	Status
NWS and Julimar Exploration Wellhead Decommissioning Environment Plan	Decommissioning	3 July 2024	Scheduled for August 2024
Angel Operations Environment Plan (Lambert West Drilling)	Operations / Project	25 June 2024	In scheduling
Julimar Development Phase 3 Drilling and Subsea Installation Environment Plan	Project	10 June 2024	In scheduling
Stybarrow Decommissioning and Field Management / End State	Decommissioning	23 May 2024	In progress
Goodwyn Alpha Geophysical and Geotechnical Surveys Environment Plan	Project	30 May 2024	Scheduled for August 2024
Griffin Field Decommissioning (End State) (Griffin Field Deviation / Griffin Leave In-situ)	Decommissioning	1 March 2024	In progress
Stybarrow Plug and Abandonment	Decommissioning	21 December 2023	In progress
WA-34-L Pyxis Drilling and Subsea Installation (Revision)	Project	21 December 2023	In progress
Scarborough Seabed Intervention and Trunkline Installation	Project	13 December 2023	In progress
Scarborough WA-61-L and WA-62-L Subsea Infrastructure Installation	Project	8 December 2023	In progress
Scarborough Drilling and Completions	Project	1 December 2023	In progress
TPA03 Well Intervention	Project	28 November 2023	In scheduling
Griffin Decommissioning and Field Management	Decommissioning	21 November 2023	In progress

You can view Commonwealth Environment Plans for approved activities and operations by visiting: **info.nopsema.gov.au/home/approved_projects_and_activities** or click **here.**

LET'S TALK

INFRASTRUCTURE GETS SECOND LIFE

Woodside's largest ever decommissioning campaign to date is currently in full swing with a range of activities completed or planned across the Enfield, Echo Yodel, Stybarrow and Griffin fields off the coast of Western Australia and activities planned at the Minerva field in Victoria.

Involving the removal of an estimated 35,000 tonnes of infrastructure including more than 350 km of pipe, flowlines and umbilicals and a range of other equipment, approximately 95% is planned to be recycled or reused.

Woodside has engaged a range of contractors (including international contractors) that bring significant subsea experience, technical know-how, and that use specialist offshore vessels for safe and reliable execution of campaign activities. Specialist vessels include mobile offshore drilling units required for well plug and abandonment activities, light construction vessels for removal of subsea structures and pipe, and heavy lift vessels to remove large structures including riser turret moorings.

Woodside is working with a variety of Australian businesses, many with experience supporting defence, mining and refinery disposal, which are assisting the business to complete oil and gas decommissioning activities. Companies such as McMahon, RPA, C.D. Dodd and Birdon are playing leading roles in onshore disposal scopes, adapting established processes and pathways to support the unique requirements of the oil and gas industry.

Because of the specific needs of the campaign, new onshore facilities are being developed by sub-contractors to support and complement existing facilities.

Some large infrastructure, such as the Nganhurra Riser Turret Mooring removed in late 2023, is typically taken to the Australian Marine Complex at Henderson to be cleaned and deconstructed in preparation for recycling and reuse. Infrastructure such as pipe, flexibles and umbilicals are unloaded from offshore up to three times a week at facilities near Onslow including the Port of Ashburton.

Shire of Ashburton President Audra Smith, Cr Brie Healy, Cr Rosanne Kapor, Cr Linton Rumble, and Deputy CEO Jo Sangster visiting the decommissioning facility near Onslow.

The infrastructure is then taken to a facility established by sub-contractors C.D. Dodd and RPA at the nearby Pilbara Regional Waste Management Facility where it is decontaminated and cleaned before it's transported to another C.D. Dodd facility in Karratha for deconstruction and sorting into its constituent parts in preparation for recycling.

Woodside recently hosted Shire of Ashburton President Audra Smith, Cr Brie Healy, Cr Rosanne Kapor, Cr Linton Rumble, and Deputy CEO Jo Sangster at the decommissioning facility near Onslow. With many local businesses supporting decommissioning activities, the site visit was a great opportunity to inform stakeholders about the campaign's progress and the importance of working with the Shire to its success.

"I am immensely proud of the progress we have witnessed during our recent site visit. Woodside's decommissioning campaign, one of the largest in Australia, reinforces our commitment to responsible resource management and environmental stewardship in the Shire of Ashburton.

The efforts of the lead contractor, TechnipFMC, in removing over 35,000 tonnes of offshore infrastructure, and the work of RPA and C.D. Dodd in recycling these materials, highlight the impressive collaboration and innovation driving this project. This initiative not only supports our goal of sustainable development but also contributes significantly to the local economy. As we move towards completing this campaign by the end of 2025, I am confident that our continued dedication will produce outstanding results for both the industry and the community." – Shire of Ashburton President Audra Smith.

Join the conversation at **woodside.com/what-we-do/consultation-activities**

APPENDIX G: NRC OPERATIONS OIL SPILL POLLUTION FIRST STRIKE PLAN

North Rankin Complex Facility Operations – Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

August 2024
Revision 10a

TABLE OF CONTENTS

CONTROL AGENCIES AND INCIDENT CONTROLLERS

Source	Location	Level	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	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	Woodside	CIMT IC
		2/3	Western Australian Department of Transport (DoT)	DoT Incident Controller
	Within port limits	1	Woodside	CIMT IC
		2/3	DoT	DoT Incident Controller
Spill from vessel Note: SOPEP should be implemented in conjunction with this document	Commonwealth waters	1	Australian Marine Safety Authority (AMSA)	Vessel Master
		2/3	AMSA	AMSA (with response assistance from Woodside)
	State waters	1	DoT	DoT Incident Controller
		2/3	DoT	DoT Incident Controller
	Within port limits	1	Port Authority	Port Harbour Master
		2/3	Port Authority/ DoT	Port Harbour Master/ DoT Incident Controller

SPILLS IN STATE/ PORT WATERS

In the event of a hydrocarbon spill (hereafter 'spill') where Woodside Energy Ltd ('Woodside') is the responsible party and the spill may impact State waters and shorelines, Woodside (or the Vessel Master) will commence the initial response actions and notify the Western Australian Department of Transport (DoT). In the event that Woodside is the responsible party for a spill that occurs within Port Limits or impacts Port Waters, Woodside will notify the Port Authority and DoT for all spills.

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/ the Port Authority's role as the Controlling Agency in State waters does not negate the requirement for Woodside to have appropriate plans and resources in place to adequately respond to a marine hydrocarbon spill incident in State Waters/ within Port Limits or to commence the initial response actions to a spill prior to DoT establishing incident control in line with DoT *Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements* (July 2020). Cost recovery arrangements for offshore marine pollution incidents (MOP) are in accordance with Section 9 of the Guidance Note:

https://www.transport.wa.gov.au/mediaFiles/marine/MAC_P_Westplan_MOP_OffshorePetroleumIndGuidance.pdf

Woodside's Incident Management Structure for a hydrocarbon spill, including Woodside Liaison Officer's command structure within DoT can be seen at APPENDIX E – Woodside Incident Management Structure.

The coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines is shown in APPENDIX D – Coordination structure for a concurrent hydrocarbon spill in both commonwealth and state waters/ shorelines.

RESPONSE PROCESS OVERVIEW

<table>
<tr><th colspan="3">For guidance on credible scenarios and hydrocarbon characteristics, refer to APPENDIX A</th></tr>
<tr><td rowspan="2">ALL INCIDENTS</td><td colspan="2">Notify the Woodside Communication Centre (WCC) on:
[1]</td></tr>
<tr><td colspan="2">Incident Controller or delegate to make relevant notifications in Table 1-1 of this Oil Pollution First Strike Plan.</td></tr>
<tr><td rowspan="3">LEVEL 1</td><td>FACILITY INCIDENT</td><td>VESSEL INCIDENT</td></tr>
<tr><td>Coordinate pre-identified tactics in Table 2-1 of this Oil Pollution First Strike Plan.
Remember to download each Operational Plan.</td><td>Notify AMSA or Port Authority (if within port limits) and coordinate pre-identified tactics in Table 2-1 of this Oil Pollution First Strike Plan
Remember to download each Operational Plan.</td></tr>
<tr><td colspan="2">If the spill escalates such that the site cannot manage the incident, inform the WCC on:
[1] and escalate to a level 2/3 incident.</td></tr>
<tr><td rowspan="3">LEVEL 2/3</td><td>FACILITY INCIDENT</td><td>VESSEL INCIDENT</td></tr>
<tr><td>Handover control to CIMT and notify DoT or Port Authority (if within port limits)
Commence quick revalidation of the recommended strategies on Table 2-1 taking into consideration seasonal sensitivities and current situational awareness.
Commence validated strategies.</td><td>Handover control to AMSA or Port Authority (if within port limits) and stand up CIMT to assist.
If requested by AMSA/Port Authority:
Commence quick revalidation of the recommended strategies on Table 2-1 taking into consideration seasonal sensitivities and current situational awareness.
Commence validated strategies.</td></tr>
<tr><td>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</td><td>If requested by AMSA/ Port Authority:
Create an IAP for all ongoing operational periods.
The content of the IAP should reflect the selected response strategies based on current situational awareness.
For the full detailed pre-operational NEBA see the OSPRMA Appendix A</td></tr>
</table>

1. NOTIFICATIONS

The Incident Controller or delegate must ensure the below notifications (Table 1-1) are completed within the designated timeframes.

For spills from a vessel, relevant notifications must be undertaken by a Woodside representative.

Table 1-1: Notifications

In the event of an incident between campaign vessels, also activate relevant vessel Emergency Response Plans and/or Bridging Documents

Timing	By	To	Name	Contact	Instruction	Form	Complete? (ü)
NOTIFICATIONS FOR ALL LEVELS OF SPILL							
Immediately	Offshore Installation Manager (OIM) or Vessel Master	Woodside Communication Centre (WCC)	Corporate Incident Management Team Incident Commander (CIMT IC)	[1]	Verbally notify WCC of event and estimated volume and hydrocarbon type.	Verbal	
Within 2 hours	Woodside Site Rep (WSR), CIMT IC or Delegate	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA[1])	Incident notification office	[2]	Verbally notify NOPSEMA for spills >80L. Record notification using Initial Verbal Notification Form or equivalent and send to NOPSEMA as soon as practicable (cc to NOPTA and DEMIRS).	Link	
Within 3 days	WSR, CIMT IC or Delegate				Provide a written NOPSEMA Incident Report Form as soon as practicable (no later than 3 days after notification) (cc to NOPTA and DEMIRS) NOPSEMA [2] NOPTA [3] DEMIRS [4]	[2]	
As soon as practicable	CIMT IC or Delegate	Woodside	Environment Unit Leader	As per roster	Verbally notify Environment Unit Leader of event and seek advice on relevant performance standards from EP	Verbal	
Within 2 hours of becoming aware of a marine pollution incident (MOP) that occurs in or may impact state waters	CIMT IC or Delegate	WA Department of Transport	DoT Maritime Environmental Emergency Response Unit (MEER) Duty Officer	[5]	Verbally notify DoT MEER Duty Officer that a spill has occurred and, if required, request use of equipment stored in Karratha. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification. Additionally, DoT to be notified if spill is likely to extend into WA State waters. Request DoT to provide Liaison to Woodside IMT.	[5]	
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	[6]	The Marine Park Compliance Duty Officer is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken. This notification should include: • titleholder details • time and location of the incident • proposed response arrangements and locations as per the OPEP • contact details for the response coordinator • confirmation of access to relevant monitoring and evaluation reports when available.	Verbal	
As soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA Department of Biodiversity, Conservation and Attractions	CIMT IC or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	[7]	Phone call notification	Verbal	
As soon as practicable	Public Information	Relevant persons or organisations	To be determined	To be determined	Should it be identified that additional persons such as, but not limited to, commercial fishers or tourism operators may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for North Rankin Complex Operations.	Verbal initially	

[1] Notification to NOPSEMA must be from a Woodside Representative.

					Relevant persons or organisations will be re-assessed throughout the response period.		
As soon as practicable	Public Information	Relevant cultural authorities	To be determined	To be determined	Should it be identified that relevant cultural authorities may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for North Rankin Complex Operations. Relevant cultural authorities will be re-assessed throughout the response period.	Verbal initially	
ADDITIONAL NOTIFICATIONS TO BE MADE ONLY IF SPILL IS FROM A VESSEL							
"Without delay" as per *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) s 11(1)	Vessel Master	Australian Maritime Safety Authority (AMSA)	Response Coordination Centre (RCC)	[8]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Harmful Substances Report (POLREP) as soon as practicable following verbal notification.	[8]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT IC or Delegate	AMOSC	AMOSC Duty Manager	[9]	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.	[9]	
As soon as practicable	CIMT IC or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	[10]	**Notification for all services:** Contact OSRL duty manager and request assistance from technical advisor in Perth. Send the completed notification form to OSRL as soon as practicable.	[10]	
					Mobilisation of response personnel/ equipment: For mobilisation of response personnel/ resources, send the Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside. OSRL can advise the names on the call out authority list, if required.	[10]	
					Mobilisation of Operational and Scientific Monitoring service: For mobilisation of Operational and Scientific Monitoring (OSM) service, send the OSM Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside. OSRL can advise the names on the call out authority list, if required.	[10]	
As soon as practicable if extra personnel are required for incident support	CIMT IC or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	[11]	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	Perseus Cond.	GWA Cond.					
Operational monitoring – tracking buoy	Yes	Yes	Yes	ALL	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	**WITHIN 24 HOURS:** Tracking buoy deployed within 2 hours.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk in the Operational Monitoring Operational Plan. Deploy tracking buoy in accordance with Link.
Operational monitoring – predictive modelling	Yes	Yes	Yes	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	**WITHIN 24 HOURS:** Initial modelling within 6 hours using the Rapid Assessment Tool.	Predictive Modelling of Hydrocarbons to Assess Resources at Risk in the Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
	Yes	Yes	Yes	ALL	Send Oil Spill Trajectory Modelling (OSTM) form ([12]) to RPS Response ([12]).	Situation	**WITHIN 24 HOURS:** Detailed modelling within 4 hours of RPS Response receiving information from Woodside.	
Operational monitoring – aerial surveillance	Yes	Yes	Yes	ALL	Instruct Aviation Unit Leader to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in Appendix B Form 8.	Logistics – Aviation	**WITHIN 24 HOURS:** 2 trained aerial observers. 1 aircraft available. Report made available to the IMT within 2 hours of landing after each sortie.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk in the Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
Operational monitoring – satellite tracking	Yes	Yes	Yes	ALL	The Situation Unit Leader to action satellite imagery services. This may be obtained via: • AMOSC Duty Manager: [9] • OSRL Duty Manager: [10] • KSAT: [13] • Others identified by CIMT	Situation	**WITHIN 24 HOURS:** Service provider will confirm availability of an initial acquisition within 2 hours. Data received to be uploaded into Woodside Common Operating Picture.	
Operational monitoring – pre-emptive assessment of receptors at risk	Yes	Yes	Yes	ALL	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	**WITHIN 48 HOURS:** In agreement with WA DoT, deployment of 2 specialists for each of the Response Protection Areas (RPA) with predicted impacts.	Pre-emptive Assessment of Sensitive Receptors in the Operational Monitoring Operational Plan.
Operational monitoring – shoreline assessment	Yes	Yes	Yes	ALL	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	Planning or Environment	**WITHIN 48 HOURS:** In agreement with WA DoT, deployment of 2 specialists trained in Shoreline Clean-up Assessment Technique (SCAT) for each of the RPAs with predicted impacts.	Shoreline Assessment in the Operational Monitoring Operational Plan.
Operational and Scientific Monitoring	Yes	Yes	Yes	ALL	Consider the need to mobilise OSM resources via third party service provider.	Environment	**WITHIN 24 HOURS:**	Mobilise OSM service via OSRL: [10] Refer to OSM Bridging Implementation Plan – Part B for additional implementation information: Link Refer to Joint Industry Operational And Scientific Monitoring Plan Framework for activation criteria and additional supporting information.
Surface dispersant	No	No	No	N/A	This response strategy is not recommended.			
Containment and recovery	No	No	No	N/A	This response strategy is not recommended.			
Mechanical dispersion	No	No	No	N/A	This response strategy is not recommended.			
In-situ burning	No	No	No	N/A	This response strategy is not recommended.			
Shoreline protection and deflection	No	Yes	Yes	L2/3	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	**WITHIN 24 HOURS:** In agreement with WA DoT, activate relevant Tactical Response Plans (TRPs) within 12 hours.	Protection and Deflection Operational Plan Link *Logistics Section to download immediately and follow steps*

							In agreement with WA DoT, mobilise teams to RPAs within 24 hours of operational monitoring predicting impacts. In agreement with WA DoT, equipment mobilised from closest stockpile within 24 hours. Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles within 48 hours. **WITHIN 48 HOURS:** Supplementary equipment mobilised from OSRL within 48 hours	
Shoreline clean-up	**No**	**Yes**	**Yes**	**L2/3**	Equipment from Woodside, AMOSC and AMSA Western Australian Stockpiles and relevant personnel mobilised. Consideration of mobilisation of interstate/international shoreline clean-up equipment and relevant personnel (i.e. OSRL).	Logistics and Planning	**WITHIN 24 HOURS:** Equipment mobilised from closest stockpile within 24 hours. TRPs available for at risk shorelines within 12 hours. **WITHIN 48 HOURS:** Deployment of shoreline clean-up teams to contaminated RPAs. Access to at least 213 m^3 of solid and liquid waste storage available within 48 hours, and 3,491 m^3 by Day 3 upon activation of 3rd party contract.	Shoreline Clean-up Operational Plan *Logistics Section to download immediately and follow steps*
Oiled wildlife response	**Yes**	**Yes**	**Yes**	**ALL**	If oiled wildlife is a potential impact, request AMOSC to mobilise containerised oiled wildlife first strike kits and relevant personnel. Refer to relevant Tactical Response Plan for potential wildlife at risk. Mobilise AMOSC Oiled Wildlife Containers. Consider whether additional equipment is required from local suppliers.	Logistics and Planning	Contracted capability to treat up to an additional 250 individual fauna within a five-day period. Facilities for oiled wildlife rehabilitation are operational 24/7	Oiled Wildlife Response Operational Plan
SOURCE CONTROL TECHNIQUES								
Subsea First Response Toolkit	**No**	**Yes**	**No**	**L2/3**	Debris clearance equipment to be mobilised prior to deployment of capping stack (if feasible).	Source Control	**WITHIN 48 HOURS:** Remotely Operated Vehicle (ROV) ready for deployment within 48 hours. SFRT equipment mobilised to site for deployment within 11 days.	• Source Control Emergency Response Planning Guideline
Subsea Dispersant	**N/A**	**No**	**N/A**	**N/A**	This response strategy is not recommended. The use of subsea dispersant would increase dispersed/ entrained hydrocarbon exposure of subsea biota. Modelling predicts that the LOWC scenario will result in minimal surface or shoreline oil for the duration of the spill event and thus use of subsea dispersant would not provide a net environmental benefit.	**N/A**		
Capping Stack	**N/A**	**No**	**N/A**	**N/A**	This response strategy is not viable. Capping stack as a source control method is not considered feasible for PEN05 well as it is a platform wellhead positioned above sea level. The two subsea Persephone wells exhibit water inflow and outflow dynamics and consequently, in the event of a containment breach, it is anticipated that formation water would predominantly be produced, killing the subsea well.	**N/A**		
Relief Well	**N/A**	**Yes**	**N/A**	**L2/3**	Relief MODU supply arrangements through the AEP MoU. Wild Well Control Inc (WWCI) staff available all year round to assist with the mobilisation, deployment, and operation well intervention equipment.	Operations – Source Control Unit	**WITHIN 24 HOURS** Identify source control vessel availability within 24 hours. MODU mobilised to location within 21 days, with drilling to be completed within 77 days.	

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 deterministic hydrocarbon spill modelling for MEE-02 (see Appendix A for scenario details), the sensitive receptors outlined in **Table 3-1** are identified as priority protection areas, as they have the potential to be contacted by hydrocarbon at or above impact threshold levels within 48 hours of a spill.

Table 3-1: Receptors for priority protection with potential impact within 48 Hours

Receptor	Distance and Direction from Offshore Facility Operational Area (km)	Distance and Direction from Export Trunkline Operational Area (km)	Minimum time to shoreline contact (above 100g/m^2) in days (WCCS)	Maximum shoreline accumulation (above 100g/m^2) in m^3 (WCCS)	Tactical Response Plans
Dampier Archipelago	110, southeast	Overlapping	0.6 days (13 m^3)	325 m^3 (1.8 days)	Mermaid Sound – Dampier Archipelago Inshore Waters
Cape Bruguieres	115, southeast	8 km, east-northeast	1.3 days (1 m^3)	9 m^3 (1.5 days)	
Cohen Island	110, southeast	3 km, east-northeast	0.8 days (1 m^3)	267 m^3 (2 days)	
Keast Island	115, southeast	5 km, east-northeast	0.6 days (4 m^3)	27 m^3 (2 days)	
Legendre Island	110, southeast	8 km, east-northeast	0.6 days (11 m^3)	46 m^3 (2.8 days)	Legendre Island – Dampier

Hydrocarbon spill modelling results for MEE-01 indicate the sensitive receptors listed below have the potential to be contacted by hydrocarbons beyond 48 hours of a spill:

- Exmouth Coastline
- Ningaloo World Heritage Coastline
- Ningaloo State Marine Park
- Clerke Reef (Rowley Shoals)
- Bedwell Island

Tactical Response plans for these locations can be accessed via the link here and include the details of potential forward operating bases and staging areas.

Oil Spill Trajectory Modelling specific to the spill event will be required to determine the regional sensitive receptors to be contacted beyond 48 hours of a spill.

Figure 3-1 illustrates the location of regional sensitive receptors in relation to the North Rankin Complex Operations Operational Area and identifies priority protection areas.

Consideration should be given to other stakeholders (including mariners) in the vicinity of the spill location. **Table 3-2** indicates the assets within the vicinity of the North Rankin Complex Operations Operational Area.

Table 3-2: Assets in the vicinity of the North Rankin Complex Operations Operational Area

Asset	Distance and Direction from PPA	Operator
Angel platform	42 km east	Woodside
Okha FPSO	33 km east	Woodside
Goodwyn Alpha platform	21 km west	Woodside
Reindeer wellhead platform	9 km west (Export Trunkline Operational Area) 50 km south (Offshore Facility Operational Area)	Santos
Stag A	28 km west (Export Trunkline Operational Area) 78 km south (Offshore Facility Operational Area)	Jadestone

Wandoo B	4 km west (Export Trunkline Operational Area) 67 km south (Offshore Facility Operational Area)	VOGA

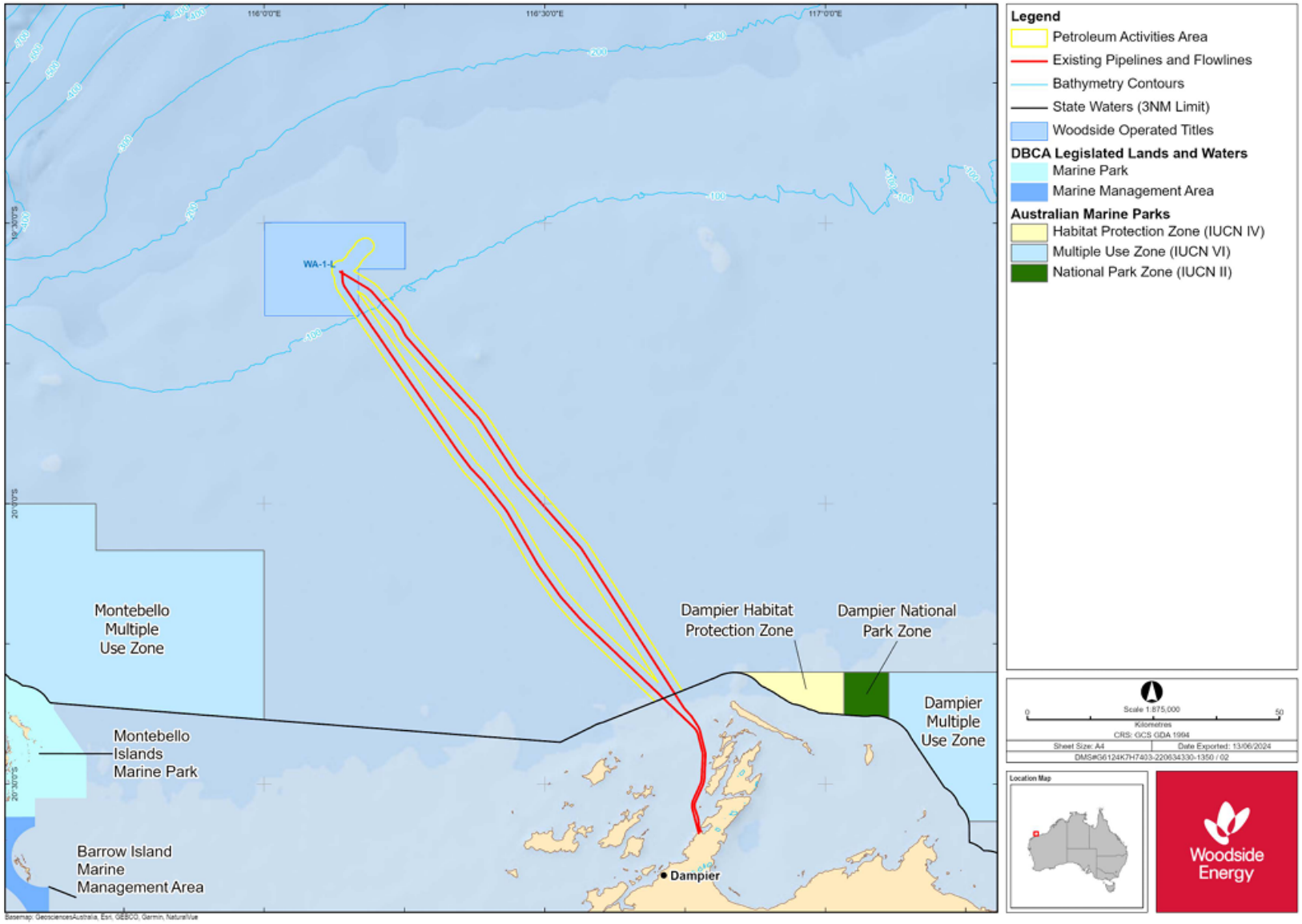


Figure 3-1: Petroleum Activities Area

4. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the North Rankin Complex Operations Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment.

APPENDIX A – CREDIBLE SPILL SCENARIOS AND HYDROCARBON INFORMATION

Table A - 1: Credible spill scenarios and hydrocarbon information

Scenario	Product	Volume	Residue	Weathering rate		Suggested ADIOS2 Analogue[2]
MEE-01: ***77-day surface release of Perseus Condensate due to loss of containment from a blowout at PEN05 well***	*Perseus Condensate*	19,863 m^3	0.6% (119.2 m^3)	12 hours (BP < 180 °C)	80.5%	NWS Condensate API 62.6
				24 hours (180 °C < BP < 265 °C)	12.8%	
				Several days (265 °C < BP < 380 °C)	6.1%	
MEE-02 (WCCS) ***16-hour Subsea release of GWA Export Condensate at 29.89 km of TL2 Export Pipeline from shore***	GWA Export Condensate	6,371 m^3	2.3% (146.5 m^3)	12 hours (BP < 180 °C)	61.2%	NWS Condensate API 62.6
				24 hours (180 °C < BP < 265 °C)	23.7%	
				Several days (265 °C < BP < 380 °C)	12.7%	
MEE-05 ***Loss of vessel containment at the PLA platform***[3]	Marine Gas Oil	1,000 m^3	5.0% (50 m^3)	12 hours (BP < 180 °C)	6%	Diesel Fuel Oil (Southern USA 1) API of 37.2
				24 hours (180 °C < BP < 265 °C)	34.6%	
				Several days (265 °C < BP < 380 °C)	54.4%	

[2] Initial screening of possible ADIOS2 analogues considered hydrocarbons with similar APIs. Suggested selection is based on the closest distillation cut to the Woodside hydrocarbon. Only hydrocarbons with >380°C distillation cuts were included in selection process.

[3] Modelling for a release of 1000 m3 Marine Gas Oil was available within Pluto Facility Operations, 83 km closer to shore than the Operational Area for this activity. It was originally undertaken in 2024 using NOPSEMA's contemporary modelling thresholds. The worst-case scenario for this category remains unchanged at approximately 1000 m3 due to the rupture of a vessel wing tank, which is the same modelled volume for the PLA Facility (1000 m3). Given that spill parameters and geographic location fall within the envelope of the existing modelling, it is an appropriate surrogate and therefore additional modelling was not required.

APPENDIX B – NOTIFICATION FORMS

Table B - 1: Notification forms

No.	Form Name	Link
1	Record of initial verbal notification to NOPSEMA template	Link
2	NOPSEMA Incident Report Form	[2]
3	Harmful Substances Report (POLREP – AMSA)	[8]
4	Marine Pollution Report (POLREP – DoT)	[5]
5	AMOSC Service Contract	[9]
6a	OSRL Initial Notification Form	[10]
6b	OSRL Mobilisation Activation Form	
6c	OSRL Operational and Scientific Monitoring Service Mobilisation Form	
7	RPS Response Oil Spill Trajectory Modelling Request	[12]
8	Aerial Surveillance Observer Log	Link
9	Tracking buoy deployment instructions	Link

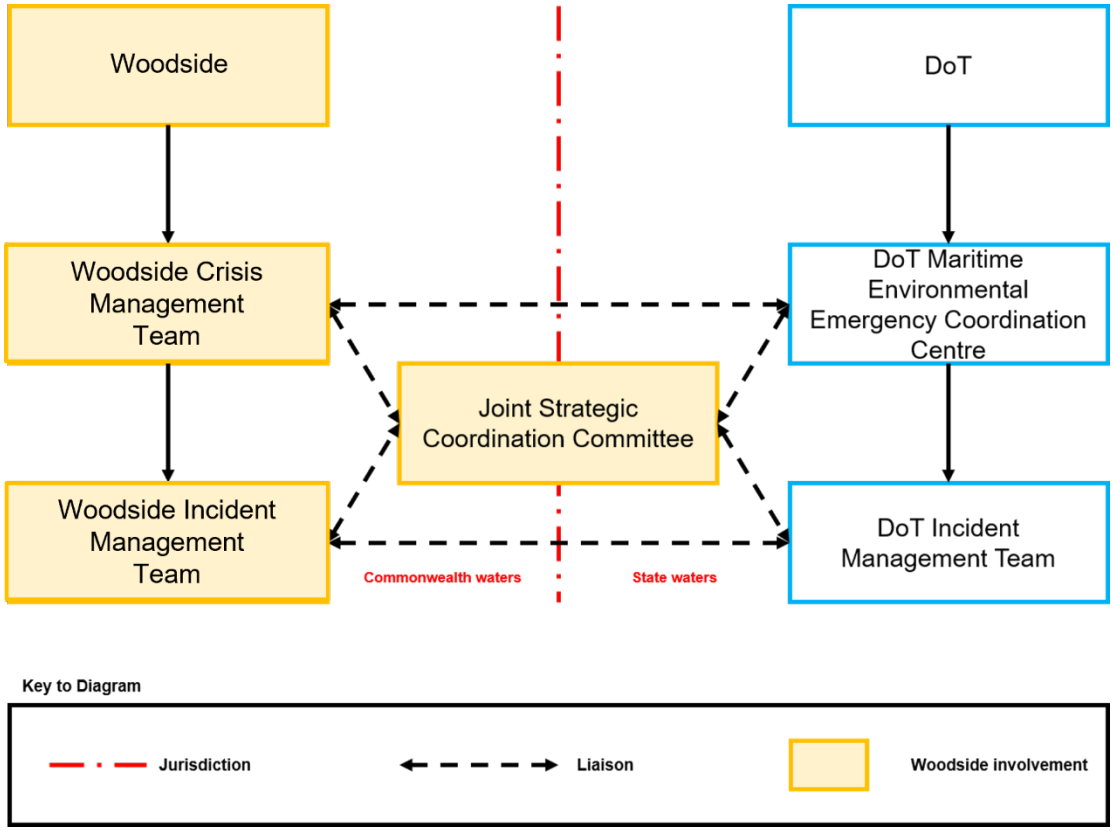
FORM 1 – RECORD OF INITIAL VERBAL NOTIFICATION TO NOPSEMA

NOPSEMA phone: [2]		
Date of call		
Time of call		
Call made by		
Call made to		
Information to be provided to NOPSEMA:		
Date and time of incident/ time caller became aware of incident		
Details of incident	**1. Location**	
	2. Title	
	3. Source	□ **Platform**
		□ **Pipeline**
		□ **FPSO**
		□ **Exploration drilling**
		□ **Well**
		□ **Other (please specify)**
	4. Hydrocarbon type	
	5. Estimated volume	
	6. Has the discharge ceased?	
	7. Fire, explosion or collision?	
	8. Environment Plan(s)	
	9. Other Details	
Actions taken to avoid or mitigate environmental impacts		
Corrective actions taken or proposed to stop, control or remedy the incident		
After the initial call is made to NOPSEMA, please send this record as soon as practicable to:		
NOPSEMA	**[2]**	
NOPTA	**[3]**	
DEMIRS	**[4]**	

APPENDIX C – SPILL ASSESSMENT QUESTIONS

What has happened?		
Date/time		
Spill source		
Spill cause		
Safety situation		
What is it?		
Oil type and name		
Oil properties	Specific gravity	
	Viscosity	
	Pour point	
	Asphaltenes	
	Wax content	
	Boiling point	
Where is it?		
Latitude and longitude		
Distance and bearing		
Affected area	☐ Offshore	
	☐ Subsea	
	☐ Shoreline	
	☐ Estuary	
	☐ Port	
	☐ Harbour	
	☐ Inland	
	☐ River	
	☐ Other (please detail):	
Water depth		
How big is it?		
Area		
Release type	☐ Instantaneous	Estimated volume:
	☐ Continuous release	Estimated release rate:
Where it is going?		
Metocean conditions		
Currents and tides		
What is in the way?		
Resources at risk		
Time until resource contact		
What's happening to it?		
Weathering processes		
Response actions underway		

APPENDIX D – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/SHORELINES[4]



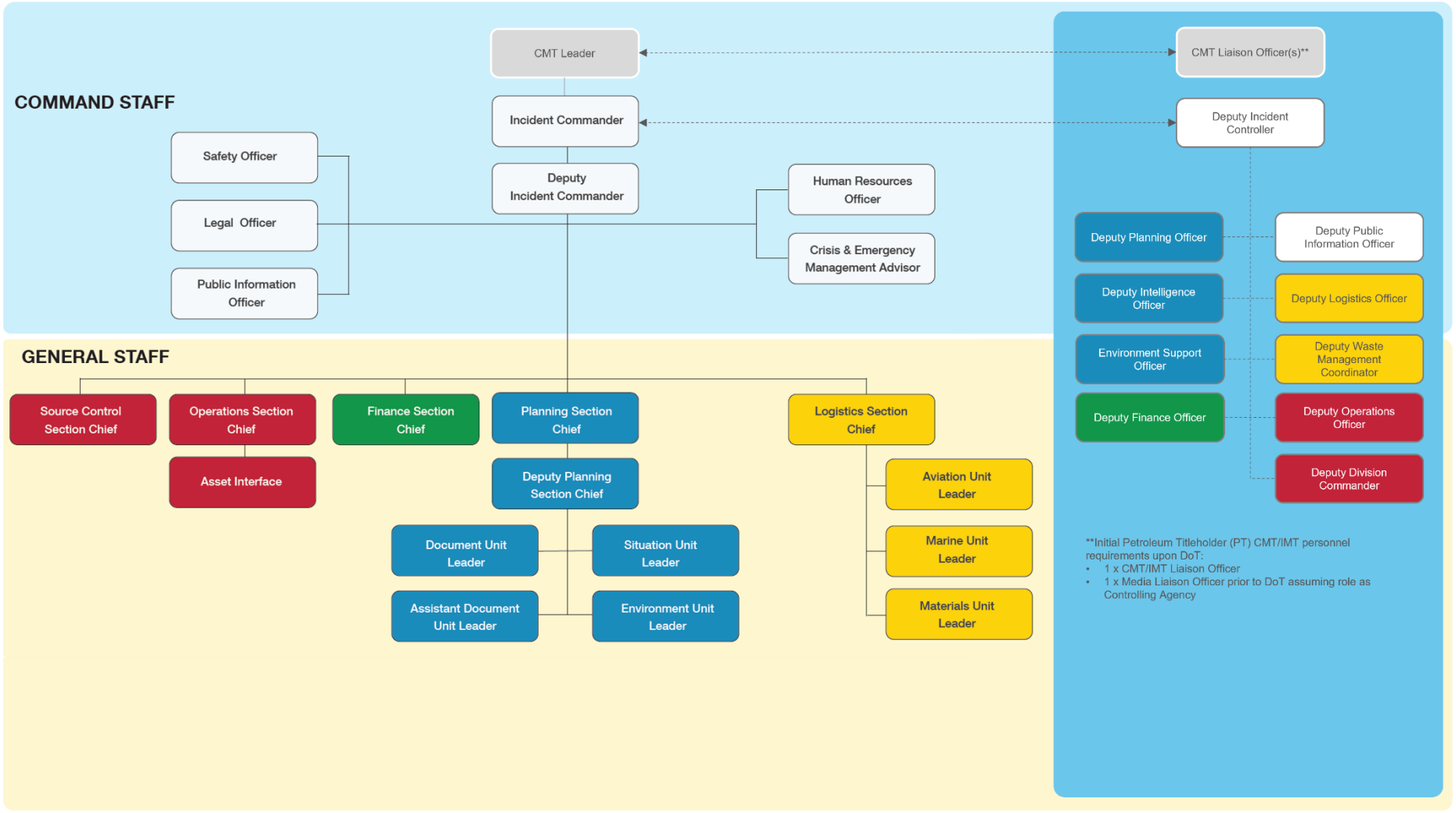
The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder).

The Control Agency/ Hazard Management Agency (HMA) for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity is DoT. DoT will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

[4] Adapted from DoT Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements July 2020. Note: For full structure up to Commonwealth Cabinet/Minister refer to Marine Oil Pollution: Response and Consultation Arrangements Section 6.5, Figure 4.

APPENDIX E – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DoT IMT if required). 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. In the event the Port Authority is the Control Agency within Port Limits, Woodside will make available similar roles as requested.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DoT Fremantle Incident Control Centre (ICC) as soon as possible after the formal request has been made by the State Marine Pollution Coordinator (SMPC), and that the remaining initial cohort will attend no later than 8 am on the day following the request being formally made to Woodside by the SMPC. For Woodside personnel designated to serve in DoT's Forward Operating Base (FOB), it is expected that they arrive at the FOB no later than 24 hours from the formal request being made by the SMPC.

Area	Role	Woodside personnel[5]	Key Duties	#
DoT Maritime Environmental Emergency Coordination Centre (MEECC)	CMT Liaison Officer	CIMT Liaison	• Provide a direct liaison between the CMT and the MEECC. • Facilitate effective communications and coordination between the CIMT Leader and SMPC. • Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.	1
DoT IMT Incident Control	Deputy Incident Controller	Deputy Incident Commander (Deputy IC)	• Provide a direct liaison between the PT IMT and DoT IMT. • Facilitate effective communications and coordination between the PT IC and the DoT IC. • Offer advice to the DoT IC on matters pertaining to PT incident response policies and procedures. • Offer advice to the Safety Coordinator on matters pertaining to PT safety policies and procedures, particularly as they relate to PT employees or contractors operating under the control of the DoT IMT.	1
DoT IMT Intelligence	Deputy Intelligence Officer	Situation Unit Leader (Intelligence)	• As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. • Facilitate the provision of relevant modelling and predications from the PT IMT. • Assist in the interpretation of modelling and predictions originating from the PT IMT. • Facilitate the provision of relevant situation and awareness information originating from the DoT IMT to the PT IMT. • Facilitate the provision of relevant mapping from the PT IMT. • Assist in the interpretation of mapping originating from the PT IMT. • Facilitate the provision of relevant mapping originating from the DoT IMT to the PT IMT.	1
DoT IMT Intelligence – Environment	Environment Support Officer	Deputy Environment Unit Leader	• As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process.	1

[5] *These positions would be mobilised, in consultation with DoT, to align to the actual spill scenario. The selected roles and/or individual personnel would be subject to continued evaluation to ensure continued 'best fit'. For CIMT roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through internal resourcing and mutual Aid agreements such as the AMOSC Core Group via* [9]

Area	Role	Woodside personnel[5]	Key Duties	#
			• 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.	
DoT IMT Planning-Plans/ Resources	Deputy Planning Officer	Deputy Planning Section Chief	• As part of the Planning Team, assist the Planning Officer in the performance of their duties in relation to the interpretation of existing response plans and the development of incident action plans and related sub plans. • Facilitate the provision of relevant IAP and sub plans from the PT IMT. • Assist in the interpretation of the PT OPEP from the PT. • Assist in the interpretation of the PT IAP and sub plans from the PT IMT. • Facilitate the provision of relevant IAP and sub plans originating from the DoT IMT to the PT IMT. • Assist in the interpretation of the PT existing resource plans. • Facilitate the provision of relevant components of the resource sub plan originating from the DoT IMT to the PT IMT. **(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)**	1
DoT IMT Public Information-Media/ Community Engagement	Deputy Public Information Officer	Deputy Public Information Officer	• As part of the Public Information Team, provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DoT Information and Warnings team. • Offer advice to the DoT Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DoT Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DoT Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. • Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.	1
DoT IMT Logistics	Deputy Logistic Officer	Deputy Logistics Section Chief	• As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. • Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements.	1

Area	Role	Woodside personnel[5]	Key Duties	#
			• 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)**	
DoT IMT Finance-Accounts/ Financial Monitoring	Deputy Finance Officer	Deputy Finance Section Chief	• As part of the Finance Team, assist the Finance Officer in the performance of their duties in relation to the setting up and payment of accounts for those services acquired through the PTs existing OSRL, AMOSC and private contract arrangements. • Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response. • Assist the Finance Officer in the tracking of financial commitments through the response, including the supply contracts commissioned directly by DoT and to be charged back to the PT.	1
DoT IMT Operations	Deputy Operations Officer	Deputy Operations Section Chief	• As part of the Operations Team, assist the Operations Officer in the performance of their duties in relation to the implementation and management of operational activities undertaken to resolve an incident. • Facilitate effective communications and coordination between the PT Operations Section and the DoT Operations Section. • Offer advice to the DoT Operations Officer on matters pertaining to PT incident response procedures and requirements. • Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DoT response efforts.	1
DoT IMT Operations – Waste Management	Deputy Waste Management Coordinator	Deputy Waste Coordinator (Materials)	• As part of the Operations Team, assist the Waste Management Coordinator in the performance of their duties in relation to the provision of the management and disposal of waste collected in State waters. • Facilitate the disposal of waste through the PT's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements. • Collects Request Forms from DoT to action via PT IMT.	1
DoT FOB Operations Command	Deputy Division Commander	FOB Deputy Incident Commander	• As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. • Provide a direct liaison between the PT FOB and DoT FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DoT Division Commander. • Offer advice to the DoT Division Commander on matters pertaining to PT incident response policies and procedures. • Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors.	1

Area	Role	Woodside personnel[5]	Key Duties	#
			• Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.	
			Total	11

APPENDIX G – DOT LIAISON OFFICER RESOURCES TO WOODSIDE

Once DoT activates a State waters/shorelines IMT, DoT will make available the following roles to Woodside.

Area	DoT Liaison Role	Personnel Sourced from:	Key Duties	#
Woodside CIMT	DoT Liaison Officer (prior to DoT assuming Controlling Agency)/ Deputy Incident Controller – State waters (after DoT assumes Controlling Agency)	DoT	• Facilitate effective communications between DoT's SMPC/ Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. • Provide enhanced situational awareness to DoT of the incident and the potential impact on State waters. • Assist in the provision of support from DoT to the Petroleum Titleholder. • Facilitate the provision technical advice from DoT to the Petroleum Titleholder Incident Controller as required.	1
Woodside CIMT Public Information – Media	DoT Media Liaison Officer	DoT	• Provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DoT Information & Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures.	1
			Total DoT Personnel Initial Requirement to Woodside	2

APPENDIX H: PROGRAM OF ONGOING ENGAGEMENT WITH TRADITIONAL CUSTODIANS

Proposed Program of Ongoing Engagement with Traditional Custodians

This Program of Ongoing Engagement with Traditional Custodians ("Program") has been developed to demonstrate Woodside's commitment to ongoing engagement and support of Traditional Custodians' capacity to care for and manage Country, including Sea Country, and has been directly informed by Traditional Custodians' feedback regarding their capacity to engage and consult on Environment Plans.

It is a living document designed to evolve with ongoing consultation and feedback from Traditional Custodians and, at a minimum, will be subject to annual review. In addition to this Program, Woodside will continue to participate in, and support collective industry engagement with Traditional Owners on the development of a future, sustainable, industry wide Program. Through the Program, Woodside actively supports Traditional Custodians' capacity for, and involvement in, ongoing engagement and feedback on environment plans.

The Program has been developed so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the possible consequences of an activity to be carried out under an environment plan on their functions, interests and activities as they relate to cultural values. This feedback will be evaluated in conjunction with Traditional Custodians and, where necessary, avoidance or mitigation strategies in will be developed in collaboration with Traditional Custodians. How the Program is implemented with specific Traditional Custodians will depend on their stated needs and priorities

The Program is underpinned by Woodside's First Nations Communities Policy (woodside.com), the objective of which is to ensure Woodside partners and engages with First Nations communities to create positive economic, social and cultural outcomes that leave a lasting legacy. Woodside does this through building respectful relationships and partnerships with First Nations communities where we are active, in the areas where they are most interested in. We acknowledge the unique connection that First Nations communities have to land, waters and the environment.

The Program will include, as agreed with relevant communities, reasonable commitment to:

1. **Support for ongoing dialogue and engagement**

Woodside will support the capacity of Traditional Custodians to participate in ongoing dialogue and engagement about the environment plans and to enable the ongoing and future identification of cultural values potentially impacted by Woodside's activities. Woodside further commits to agreeing consultation protocols with individual Traditional Custodians to ensure the material provided is appropriate in level of detail such that the potential for cultural impact from Woodside activities can be determined and as required measures can be adopted to avoid or minimise impact.

In addition, Woodside will receive feedback on cultural values from an individual person or organisation that identifies as a Traditional Custodian, at any stage during the development and implementation of activities. This feedback will be evaluated, in conjunction with the Traditional Custodian individual or group and if required, control measures will put in place to avoid impacts to cultural values, or where avoidance is not possible, to minimise and mitigate the impacts to an acceptable level.

Where cultural values are identified post activity completion, any controls relevant to value management will be implemented during the next relevant activity.

2. Support for the identification and recording of cultural features

Woodside will support Traditional Custodians to record and articulate their Sea Country values and will invest in cultural assessments codesigned with Traditional Custodians, where required, to inform potential risks to cultural values from our petroleum activities.

This may include supporting cultural mapping by Traditional Custodians to identify and map significant cultural features including archaeological sites and other cultural values. The scoping of the mapping process will be codesigned with Traditional Custodians.

Woodside understands that cultural knowledge remains the intellectual property of Traditional Custodians and will agree with Traditional Custodians at the outset how that information from surveys will be used to feedback into and inform the environment plan's design and implementation.

In addition, Woodside applies the Cultural Heritage Management Procedure 2019, updated in 2023, to the Program which*:*

- provides a process for the identification, protection, and management of Cultural Heritage taking into account relevant standards, in particular, the United Nations Declaration on the Rights of Indigenous Peoples, the Charter for the Protection and Management of the Archaeological Heritage, the Convention for the Safeguarding of the Intangible Cultural Heritage, and the Convention on the Protection of the Underwater Cultural Heritage;
- applies to underwater cultural heritage and, consistent with current practice, provides for the commissioning of (where appropriate) both archaeological and ethnographic assessments of cultural values over the submerged landscape; and
- the process includes the following:
    - early engagement with relevant Traditional Custodians
    - identification of potential heritage, this could include desktop and field surveys undertaken with the Traditional Custodians.
- the development of cultural management strategies; and, where it is determined cultural heritage may be impacted, the development of Cultural Heritage Management Plans codesigned with Traditional Custodians and implemented by Woodside's First Nations team which:
    - focus on avoidance or minimisation of impacts; and
    - provide regular reviews and for inclusion of new information and further development of the Cultural Heritage Management Plan.

Woodside is committed to continue to receive feedback on cultural values for the life of an environment plan, the inclusion of new information and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians. This information will be recorded via the Woodside Management of Knowledge Process and any potential impacts to the accepted Environment Plan evaluated via the Woodside Management of Change Process.

3. Building capacity for the ongoing protection of country

Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups. This is guided by Woodside's Indigenous Affairs Strategy 2019 ("Strategy"), which is designed to enable the building and maintaining of relationships with Traditional Custodians to leave a lasting legacy, including strengthening of Traditional Custodians' capacity to care for and manage Country, including Sea Country. The Strategy was developed with inputs from Traditional Custodians and contains four pillars that direct Woodside's social investment, policies relating to economic development, procurement and employment, and Woodside's agreement making and implementation of agreements. The pillars are:

1. Culture and Heritage Management: support social outcomes through protection, recognition and respect for culture and heritage;
2. Economic Participation: provide training, jobs, and business opportunities;

3. Capability and capacity: ensure strong corporate governance, leadership development and education initiatives to support self-determination; and
4. Safer and Healthier Communities: partner with Aboriginal people and service providers to maximise safer and healthier community outcomes.

Woodside is committed to an ongoing relationship between Woodside and the Traditional Custodian groups. Through consultation with Traditional Custodians Woodside will continue to:

- establish support for Indigenous ranger programs via social investment;
- establish support for Indigenous oil spill response capability via investigating training models;
- establish support for identification and recording of cultural values and the management of that information by Traditional Custodians;
- establish support for programs identified by the Traditional Custodians as important to them and as agreed by Woodside.

4. Support for capacity and capability in relation to governance

Pillar 3 of the Indigenous Affairs Strategy 2019 focuses on ensuring strong corporate governance, leadership development and education initiatives to support self-determination. To enable this, Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups, including in relation to governance and management systems.

The nature of this support will be informed by the individual needs of Traditional Custodian groups, but may include:

- funding or other support for community meetings, particularly where consultation with representative bodies lies outside of that body's core business and cultural authority or mandate needs to be secured,
- resourcing internal expertise so that information is managed consistently and internally, including ensuring appropriate record keeping of consultation to provide stakeholders with a lasting record of discussions, and
- development or upgrade of IT systems to manage information.

5. Program Reporting and Review of Effectiveness

Woodside will undertake an annual review of the Program to assess its effectiveness and adapt the Program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.
Progress of the Program will be reported annually in line with annual sustainability reporting via the Woodside website.

6. Current Status

Following distribution of this proposed Program, Woodside is now participating in a number of specific ongoing consultation activities with Traditional Custodian Relevant Persons. Specific ongoing activities are tabulated below:

Traditional Custodian Relevant Person	Ongoing Consultation Description	Forward Plan	Estimated Timeframes
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	BTAC proposed a Collaboration Agreement in May 2023, Woodside agreed in principle, and exchanged correspondence to understand details of the proposal. The Collaboration Agreement would enable support for BTAC to undertake an ethnographic assessment to articulate values, and ensure appropriate cost recovery	Woodside and BTAC have executed a Costs Acceptance Letter. Woodside has developed a Collaboration Agreement which is currently under internal Woodside review. Once settled internally it will be put to BTAC for their consideration.	The draft Collaboration Agreement will be provided to BTAC for consideration in November 2023. Woodside will follow up on a monthly basis for at least six months with BTAC once they are in receipt of the draft proposed Collaboration Agreement from Woodside, or until the Agreement is in place.
Yamatji Marlpa Aboriginal Corporation (YMAC)	In June 2023, YMAC provided Woodside a proposed draft Framework Agreement, and a proposal to fund in-house expertise to support consultation and implement the Collaboration Framework. In July 2023, Woodside agreed in principle to the proposed Collaboration Framework and the funding proposal and requested a meeting to work together on details. Woodside provided the Proposed Program of Ongoing Consultation to complement the proposed Collaboration Framework.	Woodside will continue to communicate with YMAC, seeking to collaborate and reach agreement on the proposed Collaboration Framework and funding agreement. At the point of EP submission, Woodside is seeking a meeting with YMAC at YMAC's earliest convenience.	Woodside will follow up with YMAC on a monthly basis for at least six months, seeking to progress the Collaboration Framework and funding agreement.
Wirrawandi Aboriginal Corporations (WAC)	In August 2023, WAC proposed a Framework Agreement with Woodside to provide a streamlined, formalised approach to consultation between WAC and Woodside. Woodside has confirmed receipt of the proposed framework from WAC.	Woodside is in contact with the WAC CEO and is currently developing a response to the proposed Framework Agreement put forward by WAC. WAC do not object to Woodside progressing environmental plans on the proviso that both parties enter into an Agreement suitable to each party. WAC have suggested a timeframe to settle the Agreement over the next 2-3 months. Woodside will be aiming to reach agreement within a shorter timeframe.	Ongoing Framework Agreement settled in 2023.
Ngarluma Aboriginal Corporation (NAC)	In September 2023, NAC proposed a Joint Working Group to practically manage consultation processes. It was proposed that the group would meet monthly for 2023 and quarterly thereafter, meetings would include NAC CEO and NAC Directors and potentially independent SME/s, the proposal was that Woodside draft a Framework Agreement, and included a request for funding for this approach. Woodside provided in-principle support for the proposal.	Woodside has provided in-principle support for NAC's proposal and is currently developing a draft Framework Agreement which once settled internally will be sent to NAC for their response.	In accordance with NAC's proposed timeframe, Woodside aims to prepare a draft Framework Agreement, settle internally and then meet to discuss in 2023.
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	In a meeting during August 2023, NTGAC proposed a Framework Agreement. This included terms for ongoing	Woodside and NTGAC/YMAC have agreed in writing to develop a Framework Agreement. Woodside have been responding to queries from NTGAC who have passed	Woodside will follow up with NTGAC on a monthly basis for at least six months, seeking to

	engagement such as frequency of consultation, participation, and content. NTGAC has also requested Woodside provide funding for an in-house environmental scientist to review material. Woodside agreed in principle to this approach, and has requested a first draft of the Framework Agreement for consideration. Woodside have agreed to pay for YMAC's in-house scientist to attend NTGAC meetings to advise NTGAC.	information provided by Woodside onto their Environmental Scientist. Woodside are awaiting a proposed draft of a Framework Agreement and general report. YMAC's preference is to prepare the drafts, Woodside have offered to assist with drafting and remain ready to respond on receipt of documents.	progress the Framework Agreement and General report.
Yinggarda Aboriginal Corporation (YAC)	In August 2023, YAC requested Woodside provide a draft Framework Agreement for their consideration. Woodside has provided a draft Framework Agreement to YAC for review.	Woodside's Proposal suggests meeting with YAC every 3 months to progress matters. The Proposal suggests committing to work continuing between meetings with each party nominating focal points. A Scope of Work and schedule of rates is included to re-imburse the cost of ongoing consultation. Woodside's Proposal includes timeframes for anticipated milestones and has suggested the Proposal be in place for an initial 2-year period. Woodside has provided the draft Framework Agreement to YAC; they have advised that they will seek direction from the YAC Board on the proposal.	Woodside will continue following up with YAC on a monthly basis for at least six months, seeking to progress the Framework Agreement.
Robe River Kuruma Aboriginal Corporation (RRKAC)	RRKAC have noted that they are insufficiently resourced to engage further and respond to Woodside regarding EPs. Woodside assesses that a Framework Agreement could address this.	Woodside has on several occasions written to RRKAC offering to fund consultation meetings. Woodside will offer RRKAC a Framework Agreement which will propose funding, scope of work and timeframes to assist with consultation and ongoing consultation. If RRKAC are open to the proposal, it is intended to put forward a draft Framework Agreement to RRKAC within the next 2 months.	Woodside will follow up with RRKAC monthly for at least six months, seeking to progress a Framework Agreement.
Ngarluma Yindjibarndi Foundation Limited (NYFL)	NYFL and Woodside have an existing Agreement in place which enables quarterly communication about Woodside activities. NYFL has said they are working with other First Nations organisation and representative Bodies developing a Framework Agreement.	Woodside has not yet seen a draft of the Framework Agreement. Woodside's expectation is that it will outline principles of engagement, details of resourcing, timeframes to meet agreed outcomes etc. Woodside look forward to receiving a draft Agreement and will engage with NYFL to settle on the details of any proposal.	Woodside will continue to follow up monthly with NYFL for at least six months, seeking to progress a Framework Agreement.
Yindjibarndi Aboriginal Corporation	Yindjibarndi have advised that they are represented by NYFL for consultation on oil and gas matters. NYFL and Woodside have met to discuss the consultation framework to be used by NYFL as representatives of Yindjibarndi. Woodside will seek to use the Framework Agreement proposed by NYFL (above) for ongoing consultation with Yindjibarndi.	Per NYFL above.	Per NYFL above.
Kariyarra Aboriginal Corporation (KAC)	In September 2023 KAC proposed an agreement which would include meeting arrangements, ongoing consultations, specialist advice and contact protocols.	Woodside support funding request that are reasonable and will seek to reach agreement on a funding proposal put forward by KAC. Woodside agrees that a Framework Agreement is a sound tool to set out ongoing consultation with KAC, funding arrangements and social investment opportunities that KAC would want explored. Woodside will propose a first draft of an agreement and put to KAC in the	Woodside will continue to follow up monthly with KAC for at least six months, seeking to progress a Framework Agreement.

		first instance. Woodside will prepare a draft agreement within the next two months to for KAC's consideration.	
Bardi and Jawi Niimidiman Aboriginal Corporation (BJNAC)	In June 2023, BJNAC provided Woodside a draft resourcing protocol for consultation. Woodside noted that the draft protocol was drafted with a focus on land based activities that fall within the BJNAC native title determination, as opposed to offshore activities. In October 2023, BJNAC and Woodside met to review the resourcing protocol, which resulted in some small changes being agreed. BJNAC and Woodside agreed that both organisations were on the same page for ongoing consultation.	Woodside supports funding request that are reasonable.. Woodside agrees that the resourcing protocol is a sound tool to set out ongoing consultation with BJNAC, funding arrangements and employment, training and contracting opportunities that BJNAC want to explore. Woodside is awaiting BJNAC's revised protocol.	Woodside will continue to follow up monthly with BJNAC for at least six months, seeking to progress a Resourcing Protocol.
Karajarri Traditional Lands Association (KTLA)	.On 19 April 2023 and 2 May 2023, KTLA said they would seek funding support from Woodside and were developing paperwork/proposal for sending to Woodside.	Woodside supports funding requests that are reasonable. Woodside is awaiting KTLA's proposal.	Woodside will continue to follow up monthly with KTLA for at least six months, seeking to progress a Framework Agreement.